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ABSTRACT

This report uses World Fertility Survey data obtained between 1974 and 1978 to investigate the initiation and duration of breast-feeding in 19 developing countries, ten of which are in Asia, eight in Latin America and the Caribbean, and one in sub-Saharan Africa (Kenya). Respondents were asked whether they had fed either their most recently born child or their next-to-last child at the breast and for how many months. A few countries added questions about the age at which infants began receiving food supplements to human milk and the number of months before the mother resumed menstruation, in an attempt to measure what effect breast-feeding had in prolonging the post-partum sterile period. The data reveal considerable diversity among the countries, although breast-feeding is widely practiced in all of them. Generally, the initation and duration of breast-feeding in these countries was found to vary inversely with higher levels of economic development, suggesting that breast-feeding will decline as these countries continue to modernize. Thus, annual birth rates could actually rise unless a concomitant increase occurs in the use of family planning methods. For much of the developing world, however, patterns of breast-feeding will remain a contributing factor in family planning for at least the immediate future. (Author/RH)

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Breast-feeding in the Developing World: Current Patterns and Implications for Future Trends

By Mary Mederios Kent

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Summary of Findings

The World Fertility Surveys provide some of the most extensive and representative data on breast-feeding patterns. This report uses these data to examine the initiation and duration of breast-feeding in nineteen developing countries: ten of these are in Asia, eight in Latin America and the Caribbean, and one in Africa (Kenya). The data reveal considerable diversity among the countries, although breast-feeding is widely practiced in all of them. Among the Asian countries the percentage of babies breast-fed varies from about 98 percent in Bangladesh and Nepal to 74 percent in Malaysia, but the percentage is over 90 in all but two Asian countries. Except for Malaysia, children in these countries are breast-fed for prolonged periods of one to two years. In Kenya, 96 percent of the children are breast-fed and weaning occurs at about 13 months of age. In the Latin American and Caribbean countries included in this report, children are somewhat less likely to be breast-fed. The percent of children breast-fed ranges from 94 percent for Jamaica to 75 percent for Costa Rica, however, it was over 90 percent in only two of the eight Latin American and Caribbean countries. The duration of breast-feeding is also lower in this region; except for Peru, where the average weaning age is 13 months, breast-feeding continues for five to nine months on the average.

Generally, the initiation and duration of breast-feeding in a country varies inversely with its level of economic development. This suggests that breast-feeding will decline as these countries continue to modernize. This trend will be modified and tempered by cultural norms and traditions about infant feeding within the individual countries.

Breast-feeding is beneficial for infant health and nutrition. Prolonged lactation also operates as a child-spacing mechanism because nursing mothers are much less likely to conceive. If the duration of breast-feeding declines with economic development, women will be exposed to the risk of pregnancy much sooner after giving birth. Where this occurs, the annual birth rates could actually rise unless there is a concomitant increase in the use of family planning methods.

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Breast-feeding in the Developing World: Current Patterns and Implications for Future Trends

June 1981
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Preface

Breast-feeding in the Developing World: Current Patterns and Implications for Future Trends is the second report in a series based on data resulting from the World Fertility Survey (WFS). Begun in 1972 under the auspices of the International Statistical Institute and with major support from the International Union for the Scientific Study of Population, the United Nations and the United States Agency for International Development, the World Fertility Survey is an international research effort to encourage and assist countries in collecting and analyzing basic demographic data and more specific data on national patterns of fertility behavior.

The data are collected by trained interviewers, almost all women, who administer the WFS "core questionnaire" modified and translated for local use. An average survey involves detailed interviews with about 5,000 women. Tabulation of survey results has been standardized, facilitating international comparisons.

The first survey was conducted in Fiji in 1974. Within the next few years over 40 developing countries are expected to complete the survey and publish a First Country Report which provides some analysis of the data and a large number of tabulations. This Population Reference Bureau series is based primarily on the data presented in these First Country Reports and other WFS publications.

Acknowledgements

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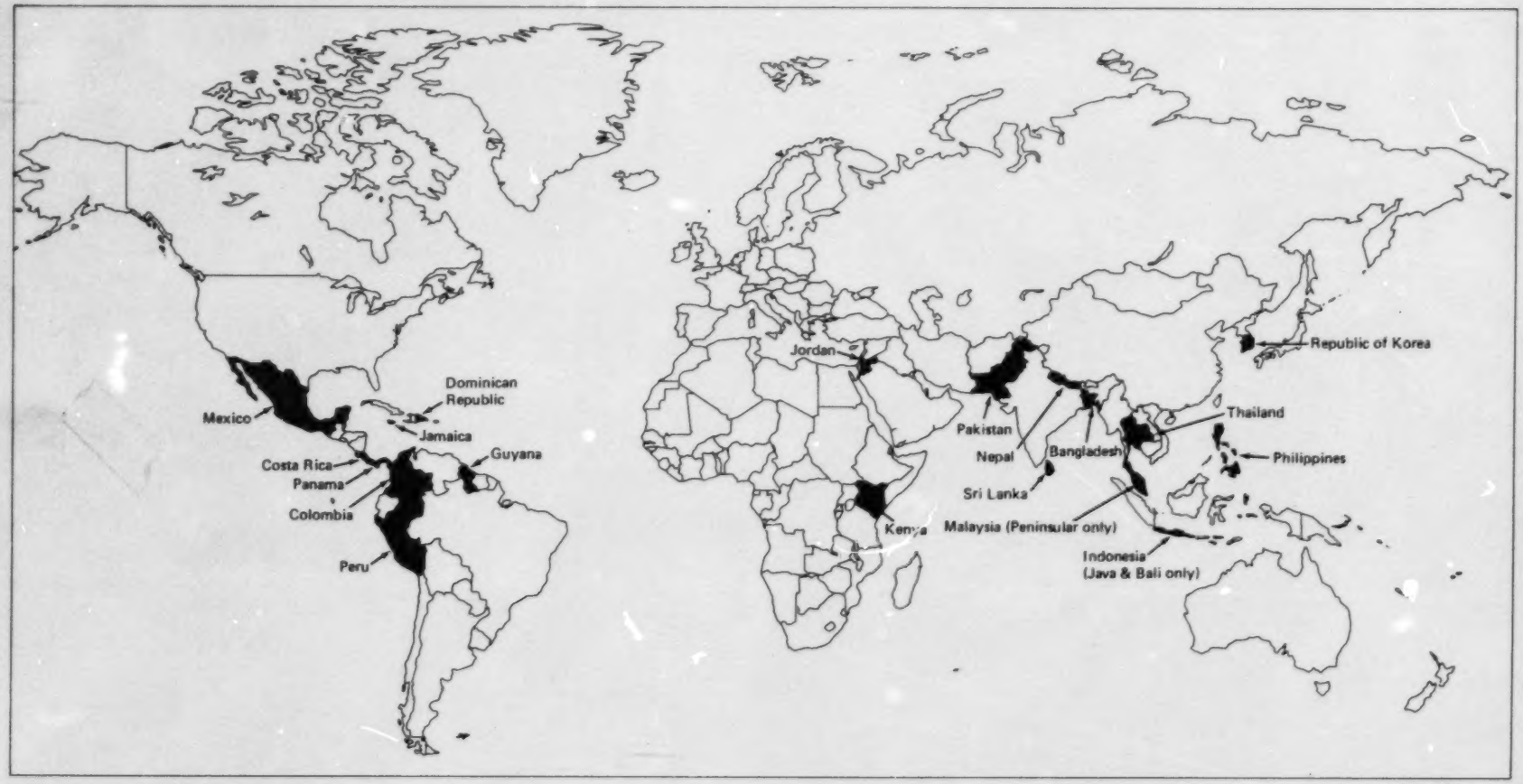
Figure 1. World Fertility Survey Countries Included in This Report



Introduction

In the past decade there have been numerous reports in the popular press that women in the developing world are abandoning the custom of breast-feeding their children in favor of more modern bottle-fed substitutes. The existence of this trend has been widely accepted, although the supporting evidence is still sparce. This situation has been viewed with alarm by nutritionists and health professionals because there are potential health risks associated with bottle-feeding in less developed countries. The interest of demographers has been aroused because of the possible impact on population growth—the length of time a mother continues to nurse her baby can affect the spacing and number of additional children she has. Meanwhile, international infant food manufacturing companies are gaining a wider market for their products among the burgeoning Third World populations, and many women in those countries are apparently delighted to find a convenient, modern substitute for nursing.

There are many and complex reasons why women in the developing world might seek an alternative to the prolonged periods of breast-feeding common in traditional societies. The baby bottle and packaged formulas share some of the same aura of modern science and technology as automobiles or television. Like them, they are a mixed blessing for people with low living standards and lower monetary incomes. They bestow "status," as proof not only of wealth but of participation in the modernization process. Bottle-feeding grants women a degree of freedom because they need not be physically present for their babies to be fed. This increases their potential participation in the labor force or other activities outside the home.

While the popularity of breast-feeding may be declining in the developing countries, an opposite trend has been cited in many developed countries.[1,2] A recent study by the U.S. National Center for Health Statistics, for example, revealed that American women are choosing to breast-feed their babies to a much greater extent now than they did ten to twenty years ago. This is a complete reversal of the trend away from breast-feeding which began in earnest during the 1930s among upper and middle class women. At that time hospital procedures, physician advice, and the current fashion combined to encourage bottle- rather than breast-feeding, beginning with the infant's first meal. During the 1940s, only about one-half of American babies were breast-fed. By the late 1960s, less than one-fourth were breast-fed, but a reversal in this trend had already begun among the most educated women.[3] By 1975, the new attitudes which had originated in that elite group had gained acceptance with enough of the general public to produce a measurable increase in the proportion of women breast-feeding their babies to 35 percent nationally.[4]

This re-evaluation of breast-feeding reflects the current interest among Americans in a greater personal involvement in pregnancy and childbirth, as well as the general climate of mistrust in the interference with natural processes—a legacy of the environmental movement, and the new acceptance of the human body which accompanied the "sexual revolution." In addition to these ideological shifts, recent medical research has revealed new evidence of physiological and psychological advantages of breast- over bottle-feeding. Not only does human milk provide the necessary nutritional needs for infants, it transmits certain antibodies from mother to child. The physical contact involved in nursing promotes an emotional bonding between mother and baby. In the industrialized world breast-feeding is now widely recognized as being not only more natural but more healthy physically and emotionally.

Will the developing countries follow the same course as industrialized countries? That is, will the practice of breast-feeding decline to the low levels of the developed countries, then experience a reversal? Alternatively, will the new favorable attitudes toward breast-feeding in developed countries be exported to the Third World, eventually trickling down to the general population to arrest the declining trend? The answers to these questions rest on the perceptions of "modernity" within these transitional societies and on how closely they follow the Western development model.

Breast Milk Substitutes

Most cultures have special soft foods for infants such as cereal gruels and sugar water, but the recent decline in breast-feeding is closely

associated with the availability of prepared infant foods and modern baby bottles. The international manufacturers of infant foods and formulas have carried out vigorous promotional campaigns in many developing countries making their products available to ever-expanding areas. They have been accused of using unfair marketing techniques by consumer groups and health professionals, sparking off what has been termed "the baby bottle debate."

The crux of this issue is whether the use of breast milk substitutes are appropriate at all for women in developing countries. Encouragement of their use may be viewed as an unwelcome intrusion by international business interests. The manufacturers argue that there is no nutritional cost to the introduction of prepared formulas to new-borns and point out that most pediatricians agree that after four to six months of age, breast milk is not sufficient to promote maximum physical development.[5] Babies receiving only mother's milk until one or two years of age are sometimes referred to as being "starved at the breast."

Advocates of the "breast is best" position are countering the formula manufacturers' marketing schemes with some advertising of their own. Numerous groups, some with funds from national and international development agencies, have launched educational media campaigns to encourage breast-feeding. Many countries now include a breast-feeding project within maternal and child health programs. Both sides of the baby bottle controversy have been aired in a U.S. Senate Subcommittee Hearing. During the 33rd World Health Assembly meetings in 1980, the World Health Organization recommended the adoption of an international code for the marketing of breast milk substitutes which would inform the purchaser that human milk is the best food for infants under six months old.

Consequences of Bottle-feeding

The reliance on prepared formulas by poor families, living in the unsanitary conditions so prevalent in developing countries, leads to both economic and health problems. The cost of human milk can be counted in terms of extra calories consumed and the time required to nurse. However, expensive prepared formulas take away money from other necessary items. Often mothers try to make the formula or powdered milk last longer by diluting it with water, meal, or flour. This impairs the food value, leading to slower physical development and possible malnutrition in the infant. Of more immediate consequence to infant health, many women lack the facilities to properly sterilize bottles and nipples or to refrigerate mixed formula or milk. The water used to mix or dilute formulas may be unsanitary. This often results in gastrointestinal disease, one of the major causes of infant deaths in developing countries.

The fervor of the baby bottle debate notwithstanding, the existence of a decline in breast-feeding in developing countries has not been well documented. Until recently, evidence was drawn from a number of small surveys or hospital studies which may not be representative. But because of current interest in this topic, recent national and regional surveys of child-bearing patterns in both developed and developing countries have included questions on breast-feeding. These surveys have provided some of the most valuable empirical evidence to date of the prevalence and duration of breast-feeding. The World Fertility Survey is among these. This report will use the results of the WFS to trace patterns of breast-feeding in nineteen developing countries, focusing on the two most important indicators: the extent to which mothers initiate breast-feeding and the duration (the length of time breast-feeding is continued). Both are subject to a number of interacting variables.

The "Socio-biological" Variable

It is estimated that at least 90 percent of all women have the ability to nurse their children. The supply and nutritional content of human milk are the result of the complex interplay of biology and behavior. Lactation is called a "socio-biological" variable because, while the ability to nurse is a human characteristic, performance is affected unconsciously by emotional response and consciously by the mother's decision to initiate or terminate breast-feeding.

The flow of milk is governed by a "let down" reflex of the mother. Most of the problems associated with the ability to nurse apparently arise from a malfunction of this reflex and are usually a response to mental stress.[6]

The supply of milk produced by the mother fluctuates in response to the frequency and intensity of the baby's nursing. More milk is produced as sucking intensifies, but if the baby becomes ill or if his diet is supplemented by weaning foods or infant formula, the less frequent breast-feeding will cause the amount of milk produced by the mother to diminish.

The amount of milk is also affected by the mother's health and nutritional status. Among populations in which few people receive even the minimum caloric requirements, lactation is an additional burden and extremely undernourished women produce somewhat less milk. The effect of certain drugs, most notably oral contraceptives, on milk supply has spurred research and development of pills more appropriate for nursing mothers.

Breast-feeding and Population Growth

Birth Intervals

The influence of breast-feeding on the number of births in a population arises from its impact on the length of time between births. This can affect the number of children a woman bears during her reproductive lifetime. For example, if a woman marries at age 21 and remains in that union until she reaches menopause at age 45, theoretically she is exposed to the risk of conception for 24 years.* If the average interval between births is two years, she could bear 12 children during her reproductive lifetime. However, if the average interval is three years, she could bear only eight children. The interval between births affects a society's rate of population growth by determining the number of years between subsequent generations. Also, in a given population, fewer births per year occur when women generally have babies every three years rather than every two years. As a consequence both the annual birth rate and population growth rate will be lower with longer birth intervals.

The birth interval consists of three broad stages, beginning with a live birth, followed by: (1) post-partum amenorrhea (sterility), (2) a fecund period after ovulation and menstruation have resumed, and (3) conception and pregnancy. The interval closes with a new live birth. The length of the birth interval is determined by the first two stages since pregnancy, except when interrupted by miscarriage, is a constant of about nine months.

The first stage of the interval, the amenorrheic period, lasts two to three months after giving birth for all mothers. Breast-feeding can further delay the return of ovulation and menstruation.

The second, or fecund, stage marks the time when a woman is biologically capable of conceiving. The length of this stage is affected by factors governing her exposure to conception—that is, frequency of intercourse and use of contraception.

Lactation's Effects on Fertility

The effect of lactation on fertility operates through two avenues. First, it is believed that the child's suckling stimulates release of the ovulation-inhibiting hormone prolactin in the mother. Greater amounts of the hormone are released the more frequently the child is nursed. Where no supplemental baby foods are given and nursing is "on demand" including several nightly feedings, the "contraceptive effect" of lactation is stronger than in cultures in which babies rely only partially on breast milk.

Second, lactation affects fertility through its association with sexual abstinence. In many societies, notably in sub-Saharan Africa, cultural norms prohibit sexual intercourse for nursing mothers. Whether abstinence is practiced expressly to avoid pregnancy or because intercourse is believed to "sour the milk" of a nursing mother, the result is the same. This taboo has the beneficial health effect of protecting a woman from becoming pregnant before both she and her baby are strong enough to experience the consequences—the physical burden of pregnancy for the woman and the loss of breast milk for the infant. In addition, it increases the birth interval, indirectly limiting the number of children born.

Sexual abstinence is observed by nursing

*Realistically, the probability that the woman will bear children would not be constant over this 24-year period. This is because physiological impairments to the ability to conceive increase with age, expecially after age 30, and because the frequency of sexual intercourse tends to decline as the marital duration increases.

mothers for as long as two or three years among the Yoruba of Nigeria, the Javanese of Indonesia, and a number of other cultures.[7,8] But demographers and anthropologists agree that this norm is breaking down in many traditional societies under the influence of urbanization and the infusion of Western ideas about family structure. If women begin to breast-feed for shorter lengths of time, the period of abstinence will also decline and this form of insurance against pregnancies occurring very close together will certainly diminish.

Extreme malnutrition in the mother can also have an effect on the duration of post-partum sterility.[9] Because it is believed that a minimum weight/height ratio is needed for monthly ovulation, the extra calories burned to keep producing milk can push an extremely malnurished mother below this minimum weight, delaying the return of menstruation even longer than the effects of lactation alone.

It is duration rather than the incidence of lactation that influences the length of post-partum sterility. A number of studies have produced estimates of the number of months that this period is extended by lactation. Generally, one month of breast-feeding adds between one-quarter and three-quarters months to this sterile period.[10,11,12] The impact of breast-feeding in prolonging this protection against pregnancy is minimal if the duration of lactation is less than six months[13] and increases significantly only after about ten months.

But the effect of lactation on post-childbirth sterility levels off as the mother continues nursing her child over a long period, at least partly because the child will eventually be given supplemental foods, and the frequency of breast-feeding will diminish. Protection against pregnancy rarely lasts for more than a year and a half, even when breast-feeding takes place for two years or longer.[14] Thus, the effect of breast-feeding on the length of post-partum sterility is greatest for median breast-feeding durations of ten to twenty months. For durations above and below that interval, the impact may be only half as large.[15] When considering the demographic consequences of changing breast-feeding patterns, it is important to remember that a decline in median breast-feeding from 20 to 15 months potentially encourages a larger fertility increase than a decline from 25 to 20 months or a drop from 8 to 6 months.

In the absence or inefficient use of contraception, breast-feeding emerges as the most important variable governing the birth interval length. It has been estimated that in countries of the developing world where efficient contraceptive use is still low, prolonged breast-feeding is responsible for more years of protection from pregnancy among couples than family planning.[16] Given the role of lactation in the length of birth intervals, a general decline in the prevalence and duration of breast-feeding would be expected to result in more births during a given time period, other things being equal. While such a hypothosis is difficult to test in real populations, several studies suggest that this has occurred.[17,18] Among an isolated Canadian Indian tribe, breast-feeding declined and birth rates experienced a real increase after baby bottles and canned milk became available at the local trading post.[19]

In many societies, the same communications and marketing networks that bring the baby bottle to the attention of women are also bringing modern contraceptives and smaller family ideals. If a decline in breast-feeding is counterbalanced by the use of contraceptives, no increase in birth rates will occur. Births may actually decrease because modern contraceptives are a much more efficient family planning method than lactation. In practice, the changes in society caused by economic development are seldom smooth or orderly. Women in traditional societies may abandon breast-feeding long before contraceptive use becomes commonplace—a change that could result in at least a temporary rise in fertility.

Data Sources

The World Fertility Survey provides some of the best data on breast-feeding practices on the national level. While participating countries tailored their surveys to reflect the issues they considered most important, they also endeavored to follow a core questionnaire developed by the WFS organization. Complying with this model, nineteen of the countries with published findings asked respondents whether they had fed either their most recently born child or their next-to-last child "at the breast," and for how many months. A few countries added questions about the age at which infants began receiving food supplements to human

milk and the number of months before the mother resumed menstruation, in an attempt to measure what effect breast-feeding had in prolonging the post-partum sterile period.

The WFS surveys in these nineteen countries, conducted between 1974 and 1978, span a large geographical area, encompassing a variety of socioeconomic, linguistic and religious characteristics. Ten countries are in Asia, one in sub-Saharan Africa, and eight in Latin America and the Caribbean.

Socioeconomic Development

Each country is at a different stage of the development process that stretches from traditional, largely rural societies, to modern, urban societies. Theoretically, as a country advances, birth and death rates fall, life expectancy increases, cities grow through rural-to-urban migration, and per capita gross national product rises with a shift from subsistence agriculture to a modern cash economy. The changes tend to be incremental, but they do not necessarily occur at the same or even at a constant rate. Death rates may fall long before birth rates, for example, or the rate of urbanization may far outdistance that of industrialization.

Appendix Table A-1 compares these countries on a number of demographic, economic, and health-related measures that give some indication of their level of development. Large differences are apparent. The infant mortality rate ranges from 20 deaths per 1,000 births for Jamaica to 153 per 1,000 for Bangladesh. The percent of the population that lives in urban areas is a mere four percent in mountainous Nepal, compared with 64 percent in Mexico and Colombia. The per capita gross national product is highest for Panama, with U.S. $1,315 per year, and lowest for Bangladesh, with only U.S. $110 per year.

Many developing countries have adopted some aspects of Western development, while rejecting other aspects that may conflict with traditional cultural values. The ethnic Chinese, for example, in many countries are quick to adapt to a modern market economy, yet strive to maintain much of their traditional family structure by continuing to reside in homogenous enclaves. Latin American countries have a strong European tradition, but this is diluted in varying degrees by native culture and a national identity.

The social disruption that accompanies the process of development leads to a questioning of the conventional wisdom concerning infant feeding as well as traditions involving basic family structure and the female role, sometimes precipitating profound changes. A shift away from universal and prolonged breast-feeding would be an example of this process. The nature of the traditional society is an important factor in the speed with which the old ways are relinquished for the new.

Geographic Region

Asia

The Asian countries included in this report, all differing in culture, language and religion, might best be grouped by geographic location: Jordan in Southwest Asia; Bangladesh, Nepal, Pakistan, and Sri Lanka in South Central Asia; Indonesia*, Malaysia†, the Philippines, and Thailand in Southeast Asia; and the Republic of Korea in East Asia. At least 90 percent of the populations of Jordan, Bangladesh, Pakistan, and Indonesia are Moslem. There is also a strong Islamic component in Malaysia, coexisting with Hindus of Indian stock and Buddhists primarily of Chinese origin. The remaining countries contain various combinations of sects derived from these three main religious groups, along with both Protestant and Catholic Christians.

The history of these Asian countries is as diverse as the numerous languages spoken by the inhabitants. Many of these nations, for example Malaysia and Indonesia, are former European colonies. The colonial experience, which often included the institution of large scale agricultural and mineral production, left a unique imprint upon the people and institutions. Other countries, such as Thailand and the Republic of Korea, were never colonized by a European power, although Korea was ruled by the Japanese for the first half of the twentieth century.

*Java and Bali only.
†West Malaysia only.

Africa

The only African country included here is Kenya. Located on the southeastern coast of Africa, Kenya's population consists of two principal ethnic groups, the Kikuyu and the Luo, and many other tribes with different languages and cultural characteristics. Ethnic allegiances and traditions are highly valued among this overwhelmingly rural (90 percent) population. Western-style development is occurring unevenly in the few large cities.

Latin America and the Caribbean

The Latin American and Caribbean countries, with the exception of Jamaica and Guyana, are much more culturally homogenous than the other WFS countries, forming the only real cultural "group" among the countries represented here. Costa Rica, Panama, Mexico, the Dominican Republic, Colombia, and Peru all share a similar linguistic, religious, and colonial heritage, dating from the Spanish conquest. All are former Spanish colonies. Spanish has remained the official language and Roman Catholicism the predominant religion. One of the main differences is the influence of traditional Amerindian culture on contemporary society in each country. In Peru, the language and traditions of ancient Indian civilizations are still very evident among the rural population. In Costa Rica, one of the "whitest" Latin American countries, the Indian influence is practically nil. The larger the Indian component, the more traditional one would expect the society in general, but each country's particular historical experience gives rise to cultural variations. Mexico is dominated by the *mestizo,* a mixture of the Amerindian and immigrant Spanish, who possess elements of both cultures, but whose ethnic identity evolved separately from either of the original groups.

Jamaica's population consists primarily of descendants of African slaves. Under British rule until 1962, Jamaica's common language is English and Christianity is the major religion. However, the African influence is evident in the Jamaican forms of religious and musical expression, and the years of slavery have affected the structure of the family.

Guyana, another former British colony, represents yet another combination of ethnic backgrounds, of which two, Indian and African, are predominant. In 1970, 52 percent of the population classified themselves as of East Indian origin, and 31 percent as African. Only about five percent of the population are classified as Amerindian and this segment tends to be isolated from the mainstream of the Guyana society.

Focus of Analysis

The variety of data available enables comparisons of breast-feeding behavior both by geographic region and by several common indices of economic development, such as per capita gross national product. An analysis of the importance of demographic characteristics and women's background (age and parity*, urban/rural residence, education, and use of modern contraceptives) will also be included for some countries.

Measures

The measures of breast-feeding to be used in this analysis, derived from published reports, allow an assessment of patterns of the initiation and duration of breast-feeding in these countries.

Two measures of the initiation of breast-feeding by new mothers are used: (1) the percentage of ever-married women who breast-fed their next-to-last child for any length of time (including only women who have had at least two children or who have had only one previous birth and were currently pregnant); and (2) the percentage of all children born in the three years prior to the survey who were breast-fed for any length of time. The second measure is based on children rather than women and may include more than one birth for each woman. Because it includes the experience for all children rather than just the last or next-to-last, it is a more comparable estimate than the women-based rate. Derived from current breast-feeding experience, it is also freer from the problems of memory bias.

The duration of breast-feeding is measured as the mean or the median number of months

*Defined as the number of children ever born to a woman.

of breast-feeding for a given number of women. Both the comparisons of breast-feeding initiation and duration among countries are based on the child-based data, on births within three years prior to the survey. Within-country analyses are based on the women-based data involving breast-feeding of the next-to-last child. Each of these measures is studied among the nineteen countries, with some attention to regional variations and differences in the level of economic development. Where the data are available, comparisons by socio-demographic characteristics of the mother will be examined within the same country.

Theoretically, the initiation of breast-feeding among mothers of live births could be nearly 100 percent. Because most women are physically able to nurse their babies, the decision not to breast-feed at all reveals something about the availability and knowledge of breast milk substitutes, and may also signify a rejection of traditional infant feeding practices. In developed countries where substitutes are readily available, breast-feeding has fluctuated in popularity among both the public and health professionals.[20]

The duration of breast-feeding is particularly related to life-style, especially women's freedom of movement and their participation in away-from-home activities. The frequent physical presence of the mother necessary for breast-feeding curtails her activities. Thus, duration of nursing more than its initiation would appear to be related to the level of modernization and urbanization.

Both aspects of breast-feeding behavior are affected by cultural attitudes toward body contact, exposure of the breast, and symbolism of the breast. These culture-based factors assume a special importance in determining breast-feeding behavior when baby bottles and commercial milk become available, because it then is clearly within the realm of conscious choice.

Limitations of the Data

While the survey data are valuable, serious problems with the reliability of the results exist. First, there are important differences between the effects of full and partial breast-feeding on the suppression of ovulation. No distinction was made in most of the questionnaires. Women could report that they were breast-feeding as long as they occasionally nursed their babies, however infrequently.

Second, the respondents' recall may not have been accurate, especially regarding duration of breast-feeding. Women were asked to remember how many months they had continued to breast-feed children born from a month to twenty years prior to the interview. This is complicated by the fact that a child's weaning might stretch over several months, during which the mother's milk is gradually replaced by other foods.

One consequence of this problem is that the women tended to round off their responses on half-yearly intervals. Thus, most women responded that they breast-fed their child for 6, 12, 18, or 24 months even though this probably did not reflect their actual behavior. Studies which follow women from the birth of a child until it is weaned show that women do not tend to wean children at a specific age.[21] This would mean that only a portion of the women who reported that they breast-fed their next-to-last child for 24 months actually did so. The remainder breast-fed for either fewer or more months.

A third source of bias arises from the fact that normal breast-feeding behavior can be cut short either by the death of the child, or, for women who were nursing at the time of the interview, by the survey itself. In these circumstances, the survey recorded only part of the total duration of breast-feeding that would have normally occurred. Including data on incomplete breast-feeding experiences will understate the average duration. For some of the measures to be used in this analysis, the responses of women whose child died at less than one year of age were excluded. Also, for some measures, breast-feeding of the next-to-last child is used in order to avoid counting a child who still may have been at the breast at the time of the interview.

Analysis

Patterns of breast-feeding are related to (1) cultural norms—those concerning proper infant foods, public exposure of the breast, etc. and (2) the level of economic development, which facilitates dissemination of information about and accessibility of convenient breast milk substitutes and which usually expands

employment opportunities for women. These two factors are not independent since there must be some elements within a culture that either encourage or repulse the forces of modernization. Variations in breast-feeding patterns between countries result from the different effects of these factors, and both must be taken into account when examining inter-country variations. Because the countries included in this report have such different levels of modernization, inter-country comparisons can perhaps be best understood by first examining the relationship of the development indices with overall breast-feeding patterns.

Level of Socioeconomic Development

Appropriate measures of economic development are difficult to isolate. The indices included in the Appendix Table A-1 are crude, but they can be useful tools for demonstrating the relationship between these aspects of development and the breast-feeding patterns in these countries.

GNP per capita

The relationship between percent of children breast-fed and mean duration of breast-feeding and per capita gross national product are shown in Figure 2. It is quite clear that countries with a higher GNP per capita have lower percentages breast-fed and shorter durations of breast-feeding than those with lower GNP per capita. The relationship is stronger for the duration, possibly indicating that the level of development is more important to the length of time that breast-feeding is continued than to whether or not children are breast-fed at all.

There are a few exceptions to the overall pattern. In Figure 2 the Republic of Korea stands out because of the long duration of lactation in relation to its GNP per capita. The incidence graph shows more variation, but three countries—South Korea, Jamaica, and Jordan—have a higher percent breast-fed than might be expected with their GNP per capita. It is impossible to conclusively explain the deviation from the normal pattern, why these countries are maintaining this feature of traditional society while experiencing socioeconomic growth. This may be a reflection of the strength of the older customs or of the newness of the economic development. In all these countries significant increases in national income have been fairly recent, since the 1960s, suggesting that modernization may have so far had very little impact on the general public. Jamaica, however, is one case in which there has been a long history of contact with the "Western" social model through interaction with the U.S. and political administration by the United Kingdom, yet its culture has remained distinct. Breast-feeding in Jamaica continues to be almost universal, high in proportion to its GNP per capita, yet length of lactation is more in line with that of other countries with the same average income. The more western life-style may discourage nursing for a prolonged period, but not the decision whether to breast-feed at all.

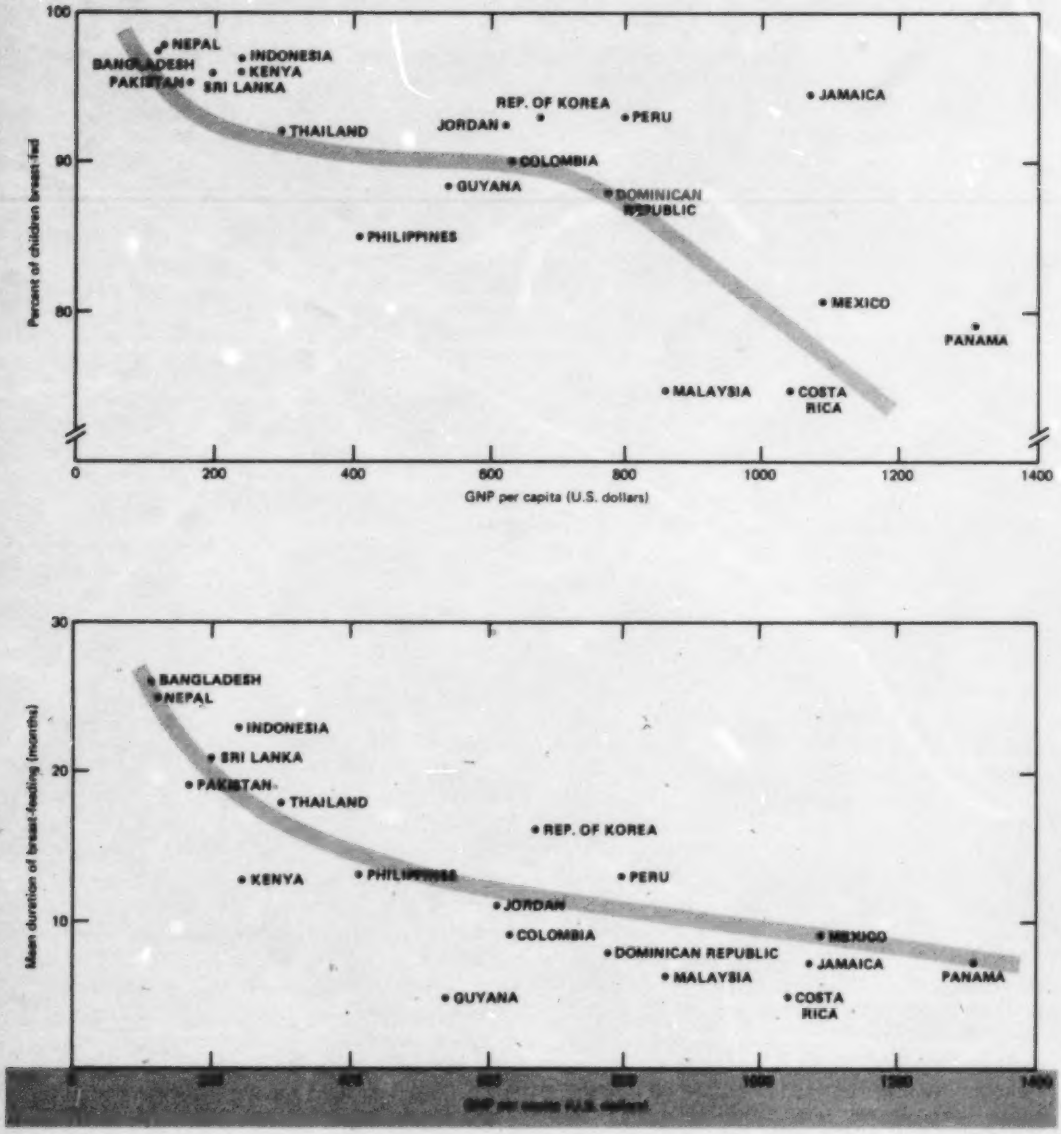
Another exceptional case is the Philippines, with a lower percent of children breast-fed than countries with a similar per capita income. Again, the explanation may rest on both cultural and economic history. This is one of the more "Westernized" Asian nations, owing to its nearly 400 years of Spanish and American rule. The educational system was instituted during the American administration and English is spoken by about 40 percent of the population. The economy experienced its greatest advancement just after World War II, preceding by more than a decade the major period of economic growth witnessed by most of the other developing countries in the 1960s. But the rate of growth slackened considerably in the last decade. It was perhaps the longer exposure to Western influence and a lower cultural resistence to changing infant feeding practices that accounts for the relatively low initiation of breast-feeding by Philippine mothers. The mean duration of breast-feeding in the Philippines, however, conforms to the general pattern in relation to per capita GNP.

Other Socioeconomic Indicators

The GNP per capita is an imperfect measure of the general wealth or level of development; it contains no information about the distribution of income within a population.

Other indices of economic development more sensitive to the general standard of living and to the degree to which the "average person" participates in the process of modernization include: infant mortality rate, literacy rate, percent of the population residing in urban areas,

Figure 2. Initiation and Duration of Breast-feeding by GNP per Capita



Sources: Table 1; Appendix Table A-1; B. Ferry, 1981, Table 1; Kenya First Country Report, Tables 8.6 and 8.9.

and percent of the labor force engaged in agriculture. For each of these measures (graphs not shown) greater percentages of children breast-fed and longer mean durations of breast-feeding were associated with indicators showing the least advanced or least modern socioeconomic conditions. In each case the relationship was stronger for duration than for percent breast-fed. Although the number of countries is small, these results strengthen the hypothesis that prolonged breast-feeding is most commonly a characteristic of traditional societies.

Interestingly, the percent of women in the labor force, unlike the other development indicators, bore no relationship to these breast-feeding measures. While the employment of women outside the home has often been cited as a major reason for declines in breast-feeding, this very general index failed to show that greater female labor force participation is associated with lower breast-feeding measures on this aggregate level (graphs not shown).

Table 1. Percentage of Children Born in the Three Years Preceding the Survey Who Were Breast-fed: WFS Countries

COUNTRY	PERCENT BREAST-FED
Nepal	98
Bangladesh	98
Indonesia	97
Kenya	96
Sri Lanka	96
Pakistan	95
Jamaica	94
Korea, Rep. of	93
Peru	93
Jordan	93
Thailand	92
Colombia	90
Guyana	88
Dominican Republic	88
Philippines	85
Mexico	80
Panama	79
Costa Rica	75
Malaysia	74

Sources: Kenya: First Country Report, Table 8-9.
All other countries: B. Ferry, 1981. Table 1.

Contraceptive Use

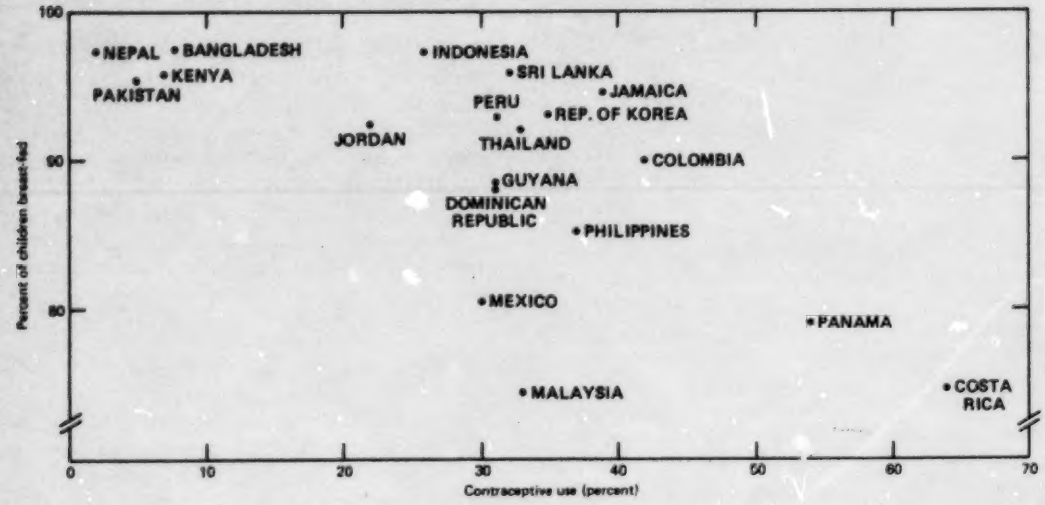
The use of contraceptives has been employed as an index of modernization and of the relative autonomy of the woman.[22] The level of contraceptive use is particularly important in relation to breast-feeding because of the effect of lactation on the length of birth intervals. Theoretically, as a society modernizes, the time spent breast-feeding will decline, creating a potential increase in the number of births within a given period. At the same time the availability, knowledge, and use of contraceptives increase. Contraceptives fill the gap in the protection from conception formerly provided by prolonged lactation. Because contraceptives are far more effective in spacing births and especially in limiting the total number of children born, birth rates fall instead of increase. The vital element in this scheme is the increased use of contraceptives; without this, a real increase in fertility can occur.

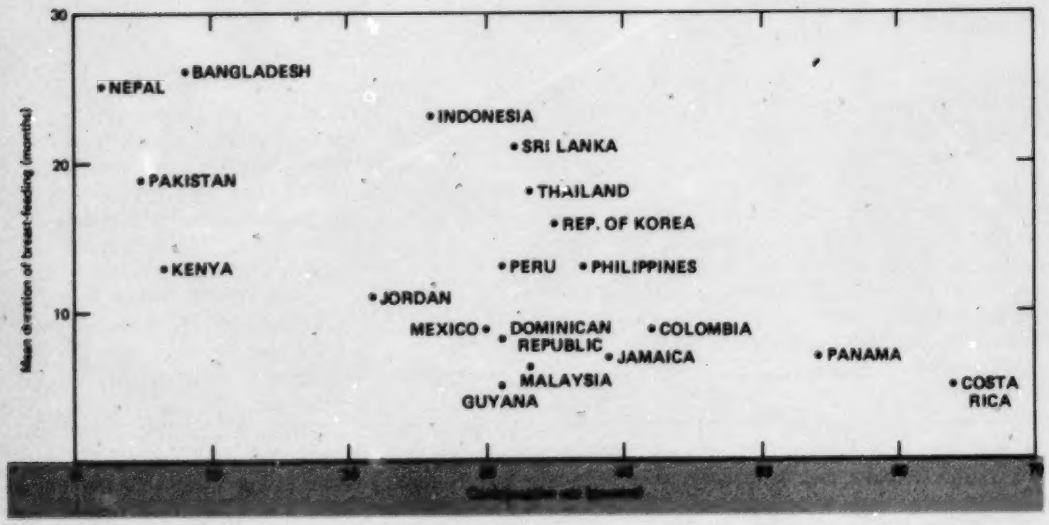
The association between the national contraceptive prevalence rate* and measures of breast-feeding are shown in Figure 3. While the association is not as obvious as it was with the per capita GNP, these variables appear to be related. As would be expected, breast-feeding is more common in countries in which contraceptive use is low. Unlike the other indices, however, contraceptive use is related more to the initiation of breast-feeding than to its duration. This may arise because contraceptive use is a measure of women's development and autonomy as much as of society's modernization. It demonstrates the woman's recognition of her ability to control natural processes and demonstrates her freedom to make a choice and to carry it out. The decision not to breast-feed at all also implies that the woman is conscious of alternatives to the traditional course.

Again, several exceptions to the general pattern should be noted. Both the Republic of Korea and Thailand have much higher contraceptive use rates in relation to the percent breast-fed and duration of breast-feeding than the other countries. Despite significant increases in the use of modern contraceptives, the traditional practice of prolonged breast-feeding continues to be almost universal. Vigorous and

*The percentage of currently married women aged 15-49 who use some method of contraception.

Figure 3. Initiation and Duration of Breast-feeding by Contraceptive Use





Sources: Table 1; Appendix Table A-1; B. Ferry, 1981, Table 1; Kenya First Country Report, Tables 8.6 and 8.9.

extremely successful family planning programs in both Korea and Thailand have facilitated contraceptive use among a wide cross-section of the public who are perhaps not yet exposed to the specific influences of the modern urban lifestyle.

Percent of Children Breast-fed: Country Comparisons

The WFS results show that breast-feeding is universal in most of the nineteen reporting countries. The percentage of children born during the three years prior to the survey who were breast-fed range from nearly 98 percent for Nepal to 74 percent for Malaysia (see Table 1). In almost two-thirds of the countries 90 percent or more of the babies are breast-fed for some length of time. In only three countries, Panama, Costa Rica and Malaysia, do these percentages fall below 80 percent. These values are in marked contrast to the U.S., where only 39 percent of women breast-feed their first child, and only 29 percent of those Americans whose babies were born between 1971 and 1974, did so.[23]

Regional Patterns

Asia

Because universal breast-feeding is associated with traditional female roles, one would expect, and finds, a high percent of children breast-fed in the Moslem countries of Jordan, Pakistan, Bangladesh, and Indonesia. Except for Malaysia, in which about one-half the population is Moslem, in each of the Islamic countries the percent of children breast-fed is greater than 92 percent.

Similar, but not strictly comparable measures are available for the major ethnic groups within Malaysia. These measures—the percentage of women breast-feeding their next-to-last child*—show that about 92 percent of the Moslem Malays nurse compared to only 59 percent of the Chinese and 75 percent of the Indians. The low overall percentage for Malaysia masks the three very different rates of these major population groups. Each tends to reflect traditional family systems, yet only among the Malays is breast-feeding universal. The Malays overwhelmingly live in rural areas, have less education, and generally have lower incomes than the other major ethnic groups. The Chinese, with the lowest incidence of breast-feeding, are at the other extreme, being the more urban and having higher educational and income levels. The Indians occupy the middle position in the initiation of breast-feeding and in socioeconomic status.

Among other Asian countries, percentages are more varied but quite high, ranging from 98 for Nepal to 85 for the Philippines. Clearly, nursing is still the most common method of infant feeding in these Asian countries.

Africa

In Kenya, the only African country represented here, 96 percent of the babies are breast-fed. Like many sub-Saharan African countries, Kenya is dominated by a very rural population. The type of dress, life-style, and strong cultural tradition serve to reinforce nursing as a societal norm.

Latin America and the Caribbean

Latin American and Caribbean countries as a whole have lower percentages of children breast-fed than other countries and the range of values is somewhat smaller. In six of the eight countries reporting from this region between 75 and 90 percent of the children are breast-fed. Peru, with its strong Amerindian influence, has one of the highest rates for the region: 93 percent of the children born in the three years prior to the survey were breast-fed. Costa Rica, whose women are generally better educated (84 percent of the women were literate in 1976 compared to about 67 percent in Peru) and are twice as likely to use contraception, has the lowest percent breast-fed for this region, 75 percent. The GNP per capita is 20 percent higher in Costa Rica, another indicator of the generally more advanced level of development.

*The percentages are based on women with at least two births (including current pregnancy) whose last closed birth interval exceeds 35 months and whose child survived at least 24 months. (Table 4.1.4E, Malaysia First Country Report).

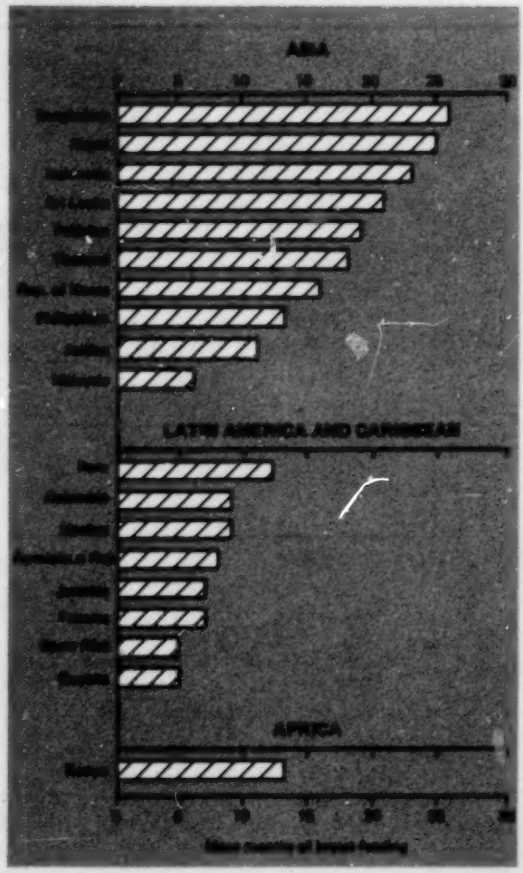
Although it boasts a relatively high living standard, Costa Rica is not predominantly urban; only 41 percent of the population lived in towns or cities in 1976, the year of the survey. Fifty-five percent of Peru's population was urban, and almost 40 percent of that number lived in Lima, the capital city. The differences in the quality of urban life, not reflected in overall national statistics, must also be considered. Lima is famous for its urban slums, whose residents participate only marginally in the process of modernization. They may have less access to breast milk substitutes, for financial and other reasons, than rural women in Costa Rica, and may be less aware of the alternatives to traditional feeding.

A healthy 94 percent of the children in Jamaica are breast-fed. This is much greater than in other countries of the region, for example Costa Rica, which have similar birth and death rates, life expectancy, literacy, and per capita GNP, suggesting a comparable level of socio-economic development. This deviation from the regional pattern may well be due to the difference in cultural attitudes toward the breast and breast exposure among the African slave and the Latin traditions so important in this region. Several hospital studies have cited a decline in breast-feeding in Jamaica and elsewhere in the English-speaking Caribbean,[24] but breast-feeding is still more prevalent here than for any of the other WFS countries in this region.

Duration of Breast-feeding: Country Comparisons

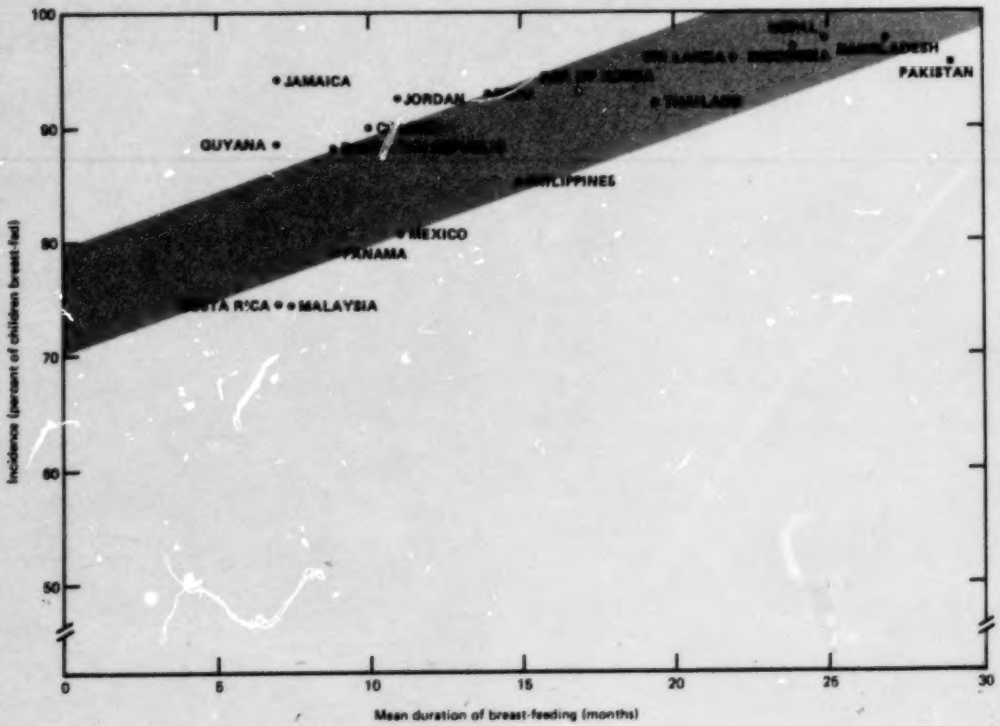
The mean duration of breast-feeding varies widely among the WFS countries, ranging from a high of 26 months for Bangladesh to a low of five months for Costa Rica and Guyana. Figure 4 shows the distribution of countries by mean number of months. More clearly than was the case for initiation, the Latin American and Caribbean countries demonstrate a distinct regional pattern of breast-feeding duration—between five and nine months for all but Peru. The variation both among and within the Asian countries is large, but lactation generally lasts longer than in Western Hemisphere countries. With the exception of Malaysia, an extreme case, the mean duration in Asian countries is fairly evenly distributed between 12 and 26 months.

Figure 4. Mean Duration of Breast-feeding for Children Born within the Three Years Preceding the Survey: WFS Countries



Sources: Kenya: Kenya First Country Report, Table 8.6.
All other countries: B. Ferry, 1981, Table 1.

Figure 5. Initiation of Breast-feeding by Average Months of Breast-feeding



Note: Mean duration of breast-feeding was calculated based on children who were breast-fed only. This was not available for Kenya.

Source: B. Ferry, 1981, Table 1.

Table 2. Median Duration of Breast-feeding by Level of Contraceptive Use: WFS Countries

MEDIAN MONTHS OF BREAST-FEEDING	CONTRACEPTIVE USE RATE* Low <30%	Moderate 30-49%	High 50% +
Less than 10 months		Colombia Dominican Rep. Guyana Jamaica Malaysia	Costa Rica Panama
10 to 20 months	Kenya Jordan Pakistan	Korea, Rep. Mexico Peru Philippines Sri Lanka Thailand	
21 or more months	Bangladesh Indonesia Nepal		

*Percent of women aged 15-49 in union using any method of contraception. Figures refer to the year of the WFS Survey.
Source: Appendix Tables A-1 and A-5.

Generally, those countries with a high percent of children breast-fed also have a lengthy mean duration, but there are some exceptions. Women in Jamaica and Guyana breast-feed for a relative short time in relation to the overall prevalence of lactation.

A long mean duration does not necessarily follow from a high percent breast-fed. In traditional societies both measures would be expected to be high, but in modern societies more commonly both will be low, or the percent breast-fed high and duration low. Breast-feeding lasting twelve months or more would be unlikely in developed countries, but a high percent breast-fed is not incompatible with a modern life-style. In Finland, for example, the percentage of women breast-feeding their babies at one month of age is high, about 79 percent, but the duration is quite short compared to these developing countries. Only about 30 percent of the Finnish mothers are still breast-feeding at three months and seven percent at six months.[25] In the United States, both the initiation and length of breast-feeding are quite low. In the WFS countries included in this report, a mixture of traditional and transitional societies, a high percentage of children breast-fed is still strongly associated with the lengthy mean duration of breast-feeding (see Figure 5).

The impact of breast-feeding patterns on the spacing of births in a population depends on this mean or median duration of breast-feeding. The frequency and intensity of nursing are also important factors, but there is little information on this aspect in the survey data. In Kenya, where a distinction was made in the survey between full and partial breast-feeding, full breast-feeding reportedly lasts only about three months on the average.[26]

Since lactation provides the greatest potential protection from pregnancy during about the tenth to twentieth months, it is possible to identify the countries most at risk of experiencing a fertility increase in the event of a significant decline in the duration of breast-feeding, assuming no great increase in contraceptive use. Countries where the practice of family planning is already moderate to high are in less danger of experiencing a real upturn in birth rates than those countries characterized by strong resistence to the widespread distribution and use of contraceptives. Table 2 characterizes

Table 3. Percent of Women Who Breast-fed Their Penultimate Child by Age of Mother: WFS Countries†*

COUNTRY	CURRENT AGE < 25	25-34	35+
ASIA			
Bangladesh	99	99	99
Indonesia	98	98	98
Jordan	93	93	94
Korea, Rep. of	94	95	97
Malaysia	78	78	80
Nepal	99	100	100
Pakistan	97	99	97
Philippines	92	87	88
Sri Lanka	97	96	97
Thailand	92	93	94
LATIN AMERICA AND THE CARIBBEAN			
Colombia	91	91	94
Costa Rica	75	82	84
Dominican Rep.	92	91	90
Guyana	87	90	91
Jamaica	95	95	96
Mexico	83	85	86
Panama	82	83	87
Peru	94	91	93

*Confined to ever-married women with at least two births (including current pregnancy) whose penultimate child survived at least 12 months.
†Not available for Kenya.

Source: B. Ferry, 1981: Tables 5A-5D. (See Appendix Table A-2.)

these WFS countries according to their median duration of breast-feeding and contraceptive use rates. The nine countries with a median duration of 10 to 20 months are those in which declines in breast-feeding could lead to temporarily higher birth rates without increases in contraceptive use. None have high contraceptive use rates, although more recent estimates for Korea and Thailand suggest contraceptive prevalence is now over 50 percent.[37]

The Moslem countries of Jordan, Indonesia, Bangladesh, and Pakistan, along with the extremely traditional populations of Nepal and Kenya, are probably at greatest risk of experiencing fertility increases due to declining lactation. Contraceptive use is extremely low in these countries, and, except for Indonesia, there have been only modest gains in the acceptibility or use of family planning.

Of the eight Latin American and Caribbean countries, only Mexico and Peru are at risk of experiencing fertility increases in the event that the median breast-feeding duration is shortened; and the median duration in Mexico, at 10 months, is at the lowest limit of the group. In the other countries in this region, further declines in the length of time children are nursed may have more of an impact on their health and their parents' time and resources than on birth interval length or birth rates.

For all the countries, however, the responses of individuals within the sample population varied substantially from the overall averages. This suggests that declines in breast-feeding could have effects on the fertility of women within certain population sub-groups, even in countries with low overall median lengths of breast-feeding. Some Costa Rican women, for example, normally breast-feed their children for 12 to 18 months—well above the median of six months. They would be at risk of the loss of months of protection from pregnancy if they begin to decrease the length of time they nurse their children. As discussed below the prevalence and duration of breast-feeding does vary within different demographic and socio-economic groups for these countries.

Age and Parity

Initiation

If there is a trend away from the breast-feeding of newborn babies that is prompted by the transition from a traditional to a modern society, younger women might be expected to be the first to follow it. Their behavior and attitudes are not as rigidly fixed as older women because they have not had the years of exposure to traditional customs that older women have had, nor the experience of raising as many children. Also, younger women are more likely to live in urban areas and to have had the opportunity to obtain some formal education, particularly if the availability of education is a fairly recent development.

Parity, the number of children a woman has borne, is a measure closely related to age. Older women have completed more years at risk of becoming pregnant, and for any given set of

Table 4. *Percent of Women* Who Breast-fed Their Penultimate Child By Birth Order of Child: WFS Countries†*

COUNTRY	BIRTH ORDER					
	1	2	3	4	5+	All
ASIA						
Bangladesh	99	99	99	99	99	99
Indonesia	98	98	99	98	98	98
Jordan	93	92	93	97	94	94
Korea, Rep. of	92	96	97	97	97	96
Malaysia	71	78	78	82	83	79
Nepal	100	100	100	100	99	100
Pakistan	98	99	98	99	99	99
Philippines	84	87	87	88	90	88
Sri Lanka	95	97	96	98	98	97
Thailand	89	95	93	95	94	93
LATIN AMERICA AND THE CARIBBEAN						
Colombia	87	92	93	95	95	92
Costa Rica	75	78	82	80	85	80
Dominican Republic	86	90	92	93	93	91
Guyana	83	92	91	93	92	90
Jamaica	94	93	94	98	98	96
Mexico	77	85	88	88	87	85
Panama	76	82	84	89	90	85
Peru	89	91	92	93	94	92

*Confined to ever-married women with at least two births (including any current pregnancy) whose penultimate birth survived at least 12 months.

†Not available for Kenya.

Source: Appendix Table A-3.

age-specific birth rates will have more children than younger women. If there is a declining trend in the percent of women breast-feeding, younger women may be less likely to breast-feed than older women and they will also have lower parity. In a developing society, the more "Westernized" women within one age group would also be expected to have fewer children; they would be more likely to have adopted the small family ideal and to have access to efficient contraceptives. These women might be somewhat less likely to breast-feed their newborn babies because they would recognize that there are alternatives.

Table 3 shows the breast-feeding behavior of women by three broad age groups, and Table 4 depicts the percent breast-feeding by parity, as compiled by B. Ferry.[28] The pattern by parity is similar within each of the three age groups, but is most pronounced for the middle group, women aged 25-34 (see Appendix Table A-2).

Asian Countries

There is no discernible pattern in the percent breast-feeding by age group in these Asian countries. Only Korea, the Philippines, and Thailand show obvious differences by age, and the patterns are not the same. In Korea and Thailand, the percent of women breast-feeding their next-to-last child drops very gradually from the older to younger age groups. This may mean that there is a shift away from breast-feeding among younger women.

Previous research in Malaysia indicates that breast-feeding was more common in the past.[29] Surprisingly, about 20 percent of the Malaysian mothers in all age groups do not breast-feed. Apparently the low prevalence of nursing in Malaysia is not limited to the younger ages, as would be expected if there was a recent trend toward bottle-feeding. This suggests that the decrease has either already occurred and has stabilized at this level, or, perhaps less likely,

that the changes are occurring simultaneously in all age groups. Also, strong ethnic differences were noted earlier.

The percentage of women who breast-fed their next-to-last child generally increased with higher birth orders and consequently, parity. Table 4 shows the fairly consistent pattern of increase by birth order, but in some countries there is a decline with the fifth or higher birth. There is almost no difference in the percentage breast-feeding by the birth order in countries where the overall level is 95 percent or more: Bangladesh, Nepal, Indonesia, Pakistan, and Sri Lanka. But, in the other countries the first born is least likely to be nursed and the difference is greatest in those countries with the lowest levels of breast-feeding.

Latin America and Caribbean Countries

Within the Latin American and Caribbean countries a clear pattern by age group emerges. Younger mothers are less likely to breast-feed than older mothers. Although the magnitude of the difference varies among countries, only the Dominican Republic deviates from this pattern. This suggests that breast-feeding is less popular with younger women, and probably indicates the likelihood of further declines in the incidence of breast-feeding in the future.

The pattern of breast-feeding by parity is also more consistent and pronounced among the Latin American and Caribbean countries. Latin American women with only two or three children are less likely to have breast-fed their next-to-last child than higher parity women, perhaps because both low parity and a low incidence of nursing indicate that they have adopted a more modern life-style.

Duration

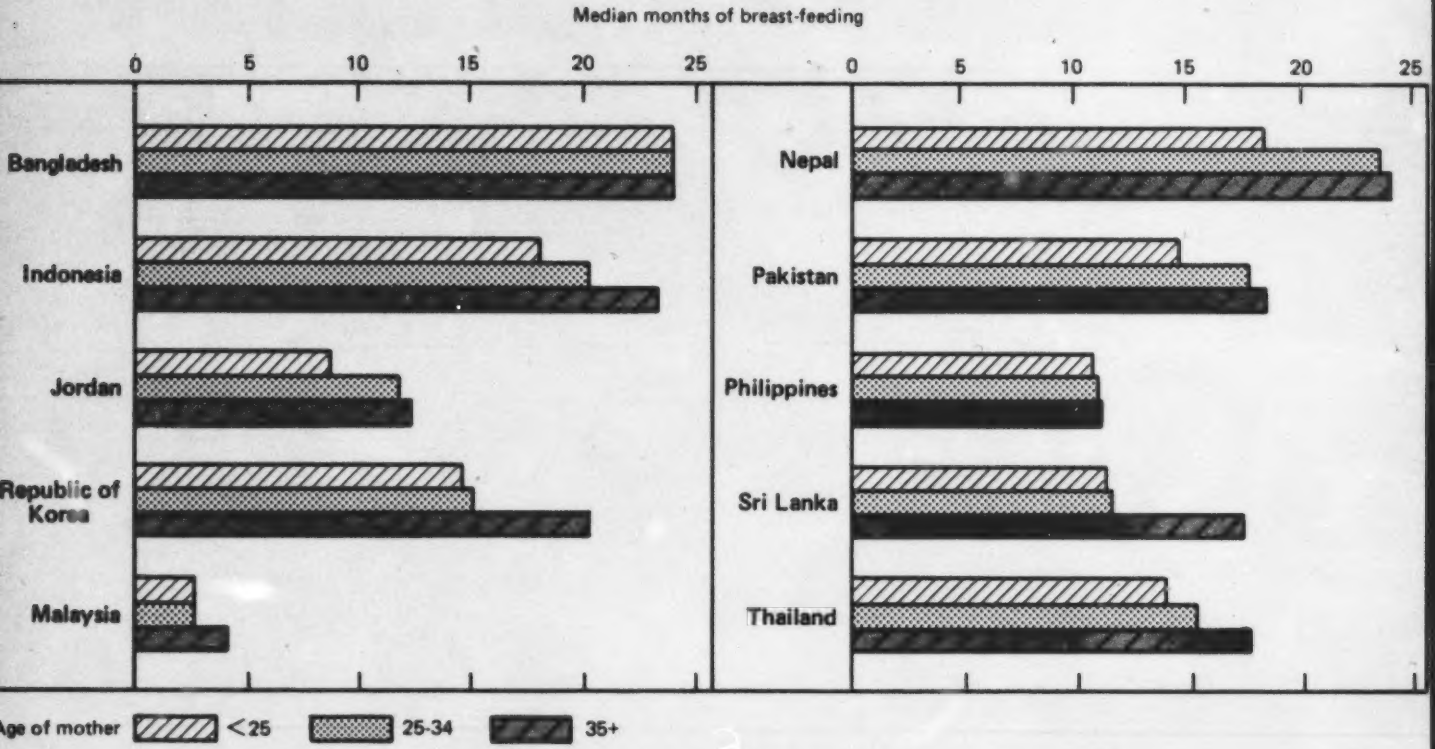
One reason that age and parity are more strongly related to the duration of breast-feeding than to the initiation is that a major impetus for the complete weaning of a child in traditional cultures is a new pregnancy. In some societies women stop breast-feeding immediately after they realize they are pregnant. In others, breast-feeding may continue for several months, although hormonal changes caused by the pregnancy will diminish the quantity and quality of the milk. In either case, the average number of months between two births will place an upper limit on the length of time a woman can continue to breast-feed her last child. This limit is important in cultures where breast-feeding is normally prolonged, and where birth rates are high.

Generally, the older the woman the longer the period of breast-feeding; however, within each age group, the parity exerts a slightly negative influence on nursing duration. As women grow older, the interval between births generally lengthens because of both biological and behavior changes. Older women are less fecund than younger women and tend to have longer periods of post-partum sterility, even with the same amount of breast-feeding.[30] They also tend to experience more anovulatory months and less frequent sexual intercourse than younger women. For a given birth interval, older women spend fewer months at risk of conception assuming that no contraceptives are used. Within each age group, however, higher parity women will have shorter birth intervals, on the average—because they have had more births than women with fewer children within the same number of reproductive years.

Thus, age is positively associated with the length of breast-feeding while, within age groups, parity exerts a slight negative influence. Clearly the independent effects of parity and age on breast-feeding will be greatest in high fertility countries. Both are indirectly associated to breast-feeding through socioeconomic differentials. Lower parity women, for example, tend to be more urban, have higher family incomes and more education than higher parity women. In short, they are more modern, just the group which will be quickest to replace breast-feeding with formulas and baby foods because they possess both the knowledge and means to do so. If there is a trend toward declining breast-feeding, this will most likely be evidenced in the median duration of the younger, low parity women. But the effect will be confounded by the physiological limits imposed by age and parity on the average birth interval length.

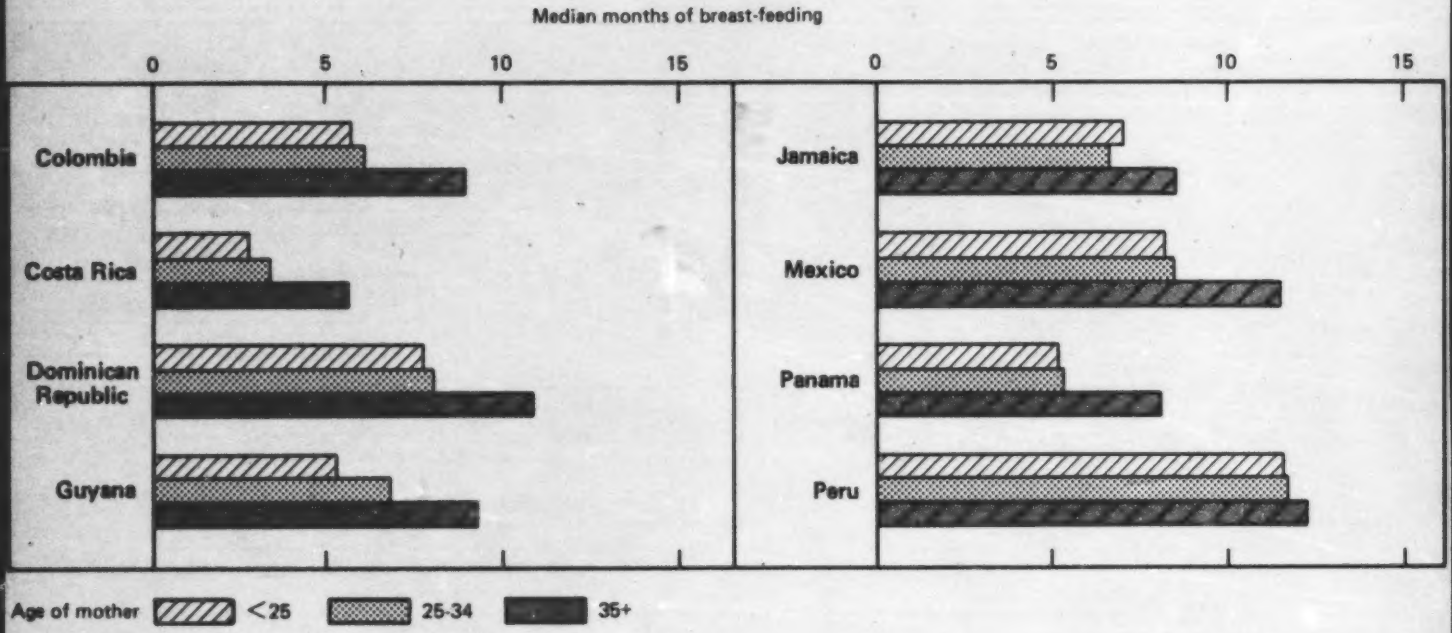
The median length of breast-feeding the penultimate child was tabulated by age and parity in Ferry's comparative study. The median for the three broad age groups are graphed for each country in Figures 6 and 7. Most of the countries showed at least a slightly higher median in the higher age groups, but the differences are not great.

Figure 6. Median Duration of Breast-feeding the Penultimate Child by Age of Mother: WFS Countries, Asia



Source: Appendix Table A-4.

Figure 7. Median Duration of Breast-feeding the Penultimate Child by Age of Mother: WFS Countries, Latin America and the Caribbean



Source: Appendix Table A-4.

Asian Countries

The median length of breast-feeding the next-to-last child is quite varied in the Asian countries. Korea, Sri Lanka, and Malaysia followed a similar pattern, with the median much longer in the oldest age group, but at the same level in the two younger age groups. This could be interpreted as evidence of a move away from breast-feeding among the younger mothers, but it may also be caused by the age pattern of childbearing. In each of these countries, most women have their children early in their marriage, between the ages of 20 and 34; birth intervals after age 35 would tend to be quite long, encouraging longer durations of breast-feeding.

There appears to be no consistent pattern by age among countries where women nurse their children for about the same amount of time. The median for both Bangladesh and Nepal is 24 months, yet only in Nepal is there a difference by age.

In Jordan, the Philippines, and Sri Lanka, the overall median length of breast-feeding is about 12 months, yet the patterns by age are quite different. In Jordan there is a gradual but clear rise in the median duration of breast-feeding with age. The oldest age group nursed their children about three months longer than the youngest group, almost a 25 percent difference. In Sri Lanka, women over 35 breast-fed their penultimate child for five months longer than younger women, about a 29 percent difference. In the Philippines, virtually no difference by age can be seen.

Perhaps because breast-feeding duration is influenced partly by age-specific fertility rates and partly by cultural tastes and norms, both of which may be changing as countries modernize, a graph of the median duration by birth order reveals a confusing array of patterns (see Figure 8a). The lack of consistency among countries of this region may result from the contradictory effect of a movement away from prolonged breast-feeding occurring simultaneously with a trend toward smaller families and/or delayed childbearing, which would otherwise encourage longer breast-feeding duration. If there is no change in breast-feeding or fertility, the pattern should look much like that of Nepal, where the duration of lactation is shorter for women of higher parity, or like those of Bangladesh or Pakistan where virtually no difference by parity is found.

Latin America and Caribbean Countries

Except for Peru and Jamaica, the Latin American and Caribbean countries show a fairly consistent pattern of median breast-feeding duration by age. The median is sharply higher in the 35 and over age group than among younger women. Again, this evidence of a tendency among younger women to breast-feed for fewer months must be considered while keeping in mind the upper limit to the duration imposed by the number and spacing of children.

For women 25-34 years of age, duration of lactation follows a similar pattern by parity in all the Latin American countries (see Figure 8b). Although the magnitude of the differences vary, women with fewer children clearly breast-feed for less time than other women in this age group. Unfortunately, we do not have information on the lengths of the birth interval for these women.

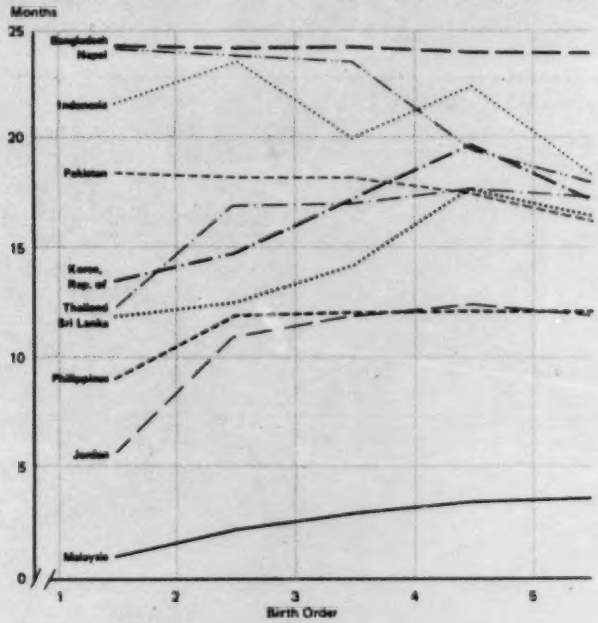
Urban/Rural Residence

Initiation

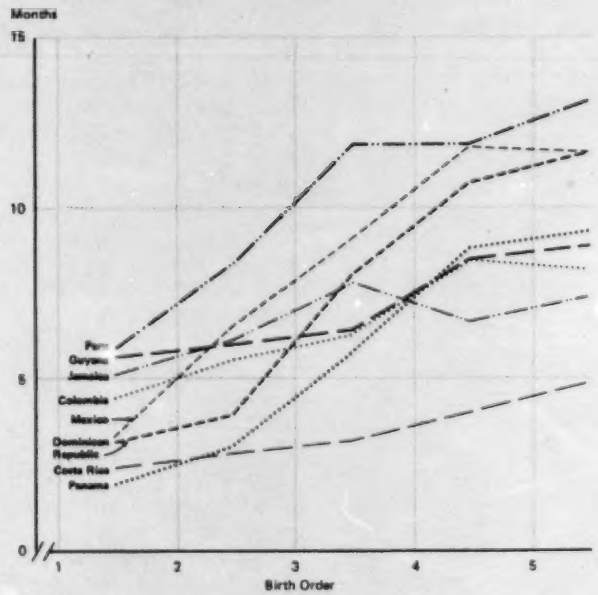
The initiation of breast-feeding for most countries is higher in rural than in urban areas, but the difference is 10 percent or more in only six countries: three in Asia—Malaysia, the Philippines, and Thailand; and three in Latin America—Peru, Mexico, and the Dominican Republic. Relative levels are given in Appendix Table A-4 and graphed in Figures 9 and 10.

In view of the rapid urbanization of many developing countries, it is useful to consider why the differences in urban/rural breast-feeding behavior are so much greater in some countries than in others and, also, whether the urban patterns are a forecast of future changes for the whole country. Cities can exert their influence through sheer numbers as migration causes urban populations to grow in relation to rural areas, and through the dissemination of urban values throughout the countryside. The six countries with the largest differences in urban/rural breast-feeding patterns represent varying stages of urbanization. For example, only about 13 percent of Thailand's population lived in urban areas in 1978 while 64 percent of Mexico's and 55 percent of Peru's populations were urban. Clearly, the importance of urban/rural differentials to future breast-feeding trends must be evaluated within the context of each country's cultural identity and socio-economic situation.

Figure 8. Median Duration of Breast-feeding the Penultimate Child by Child's Birth Order, Women 25 to 34 Years of Age: WFS Countries



a. Asian Countries



b. Latin American and Caribbean Countries

Source: Appendix Table A-4.

Duration

Average duration of breast-feeding, perhaps more quickly affected by modernization than the percent of women breast-feeding, is available according to the residence of the mother for some countries in this report from various research efforts.[31,32,33] The mean duration of breast-feeding the penultimate child by urban/rural residence for ten countries is given in Table 5. In each of these, the duration is shorter in urban areas, but the degree of difference between city and countryside is quite varied, ranging from 17 percent for Bangladesh to 90 percent for Panama.

In Panama the major cities of Panama and Colon have long been centers of international commerce because of the Panama Canal. These are modern cities where imported products are easily available. Like many Latin American countries, Panama's economy expanded during the 1960s and early 1970s, but this progress occurred primarily in the few large cities. Nearly one-half of the population still live in rural areas, engaged in subsistence agriculture. Panama's mountainous terrain, much of it heavily forested, reinforces the isolation of the countryside. It is no surprise that the mean duration of breast-feeding is much shorter in Panama's cities, where women are exposed to modern life-style and alternative infant foods are easily available, than in rural areas where residents continue to rely on traditional feeding practices.

While rural societies tend to maintain traditional roles for women, the modernization and "Westernization" of family roles, ideals, and behavior emerge first in the central urban areas most in contact with the developed world, and spread outward to the more receptive and accessible parts of the country. Transportation and communication networks play an important role in the direction and speed of this modernization process because they determine the amount of exposure that rural and village residents have to urban life-style. Another factor is the timing and size of the rural to urban migration, because this determines what proportion of urban residents are recent migrants from the countryside, perhaps still clinging to their traditional customs and values. These considerations gain a special significance where the contrast in income and living standards between urban and rural areas is substantial, as it is in most developing countries; or where distinct ethnic groups tend to be predominantly urban or rural, such as the Muslim Malays in Malaysia, 90 percent of whom live in rural areas.

Table 5. Average Months of Breast-feeding the Penultimate Child by Urban/Rural Residence: Selected WFS Countries

COUNTRY	PLACE OF RESIDENCE URBAN	RURAL	PERCENT DIFFERENCE R-U/U
Bangladesh	20.9	24.4	16.7
Colombia	7.5	10.6	41.3
Indonesia	13.8	21.4	55.1
Jordan	11.2	15.5	38.4
Kenya	10.2	13.4	31.4
Pakistan	18.7	23.1	23.6
Panama	5.8	11.0	89.7
Peru	9.5	15.6	64.2
Sri Lanka	12.8	16.7	30.5
Thailand	10.4	18.2	75.0

Sources: Kenya: adapted from Kenya First Country Report, Table 8-10;
Pakistan: I. Shah, 1980: Table 4;
Thailand: Knodel and Debavalya, 1980: Table 2;
All other countries: Bongaarts and Jain, 1980: Table 9.

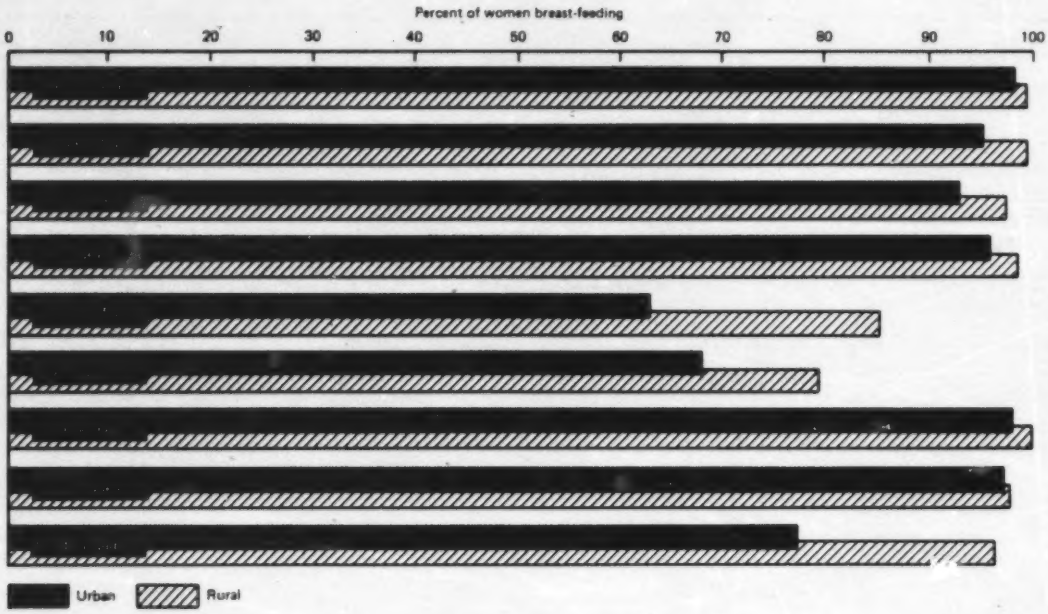
Education

Educated women are more aware of the alternatives which exist for them and for that reason are most likely to have lower measures of breast-feeding. Perhaps more important, they are participating most actively in the modernization process and are most anxious to identify themselves with that life-style.

Initiation

The percent of women breast-feeding by three broad education groups is graphed for each country in Figures 11 and 12. The countries with the greatest urban/rural differences in breast-feeding, also showed the greatest contrasts among women with varying levels of education. These two variables are not indepen-

Figure 9. Percent of Women Breast-feeding the Penultimate Child by Urban/ Rural Residence: WFS Countries, Asia



Note: Not available for Nepal.
Source: Appendix Table A-6.

dent: urban residents tend to have more formal education than rural dwellers.

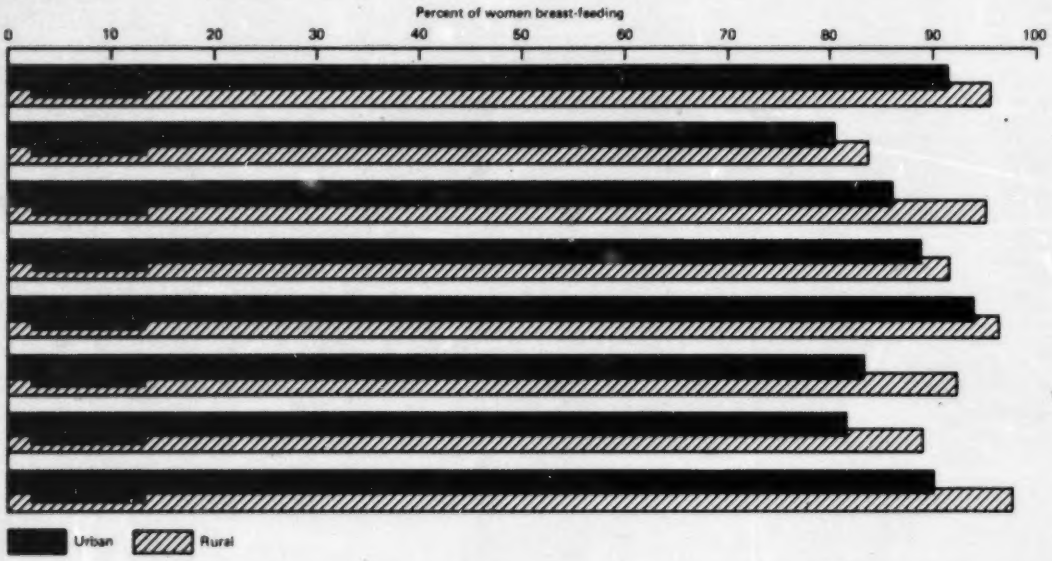
For most of the Asian countries, the percent breast-feeding is slightly lower in higher educational groups, but the differences are substantial only in Malaysia and Thailand. This pattern is also found in Jordan, the Philippines, and Pakistan, although to a lesser extent.

A more consistent relationship between breast-feeding and education emerges in the Latin American and Caribbean countries. For most of these countries, there is less of a difference in the extent of breast-feeding between those with no education and those with a primary education, than between women in these first two educational groups and those with a higher education.

Duration

Comparable statistics on the average duration of breast-feeding by educational group are not available, although some research has included this variable. Using WFS data for Pakistan, Shah[34] found that higher educational levels of the wife and husband are associated with shorter duration of breast-feeding. A similar link was found in studies using WFS data for Sri Lanka, Bangladesh, Indonesia, Jordan, Peru, Guyana, Colombia, and Panama.[35]

Figure 10. Percent of Women Breast-feeding the Penultimate Child by Urban/ Rural Residence: WFS Countries, Latin America and the Caribbean



Source: Appendix Table A-6.

Conclusions

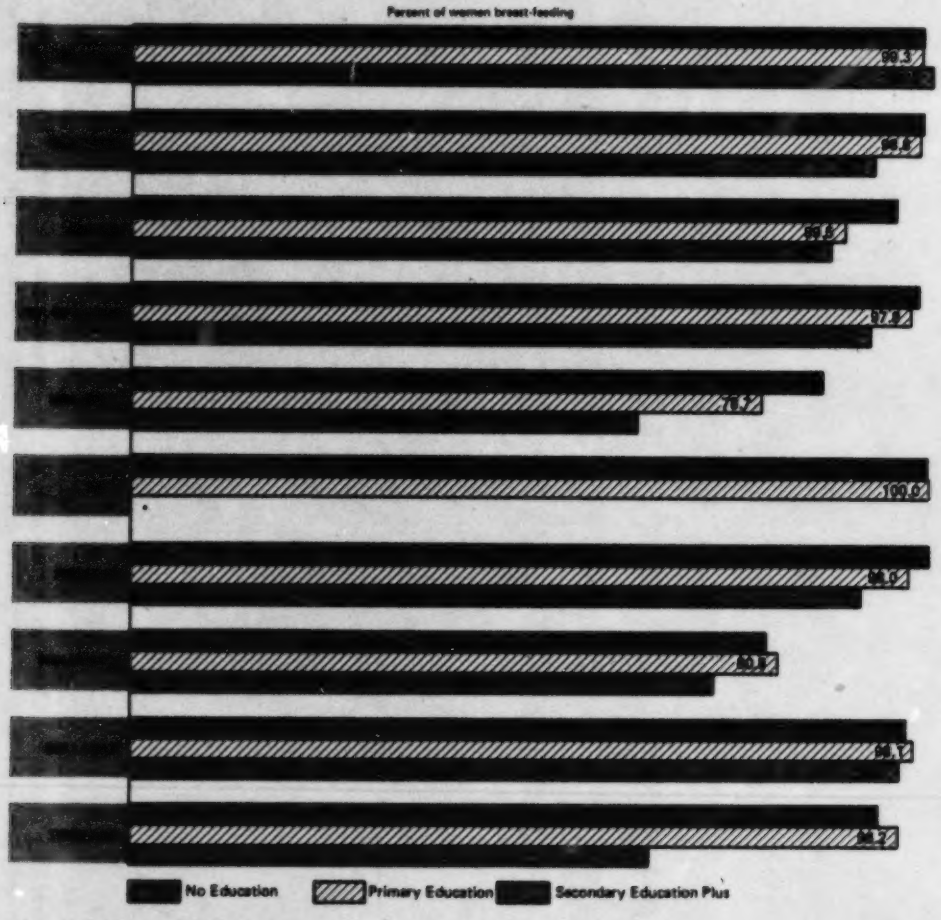
The evidence presented by the World Fertility Survey data reveals considerable diversity in the patterns of breast-feeding in these nineteen developing countries, although breast-feeding is widely practiced in all of them. The percentages of babies breast-fed varies from about 98 percent in Nepal and Bangladesh to 74 percent for Malaysia. The mean length of breast-feeding ranges from 26 months for Bangladesh to only five months for Guyana.

The practice of breast-feeding is governed by the availability of convenient substitutes and cultural traditions regarding infant feeding. The process of economic development affects both these factors because it can mean easier access to breast milk substitutes and it tends to disrupt traditional cultural norms. In these WFS countries both the prevalence and duration of breast-feeding declines as the level of development increases. This inverse relationship is strongest for the mean breast-feeding duration.

While these data do not permit an analysis of lactation trends within individual countries because they capture behavior at only one point in time, they do suggest that both the prevalence and duration will decline as these countries continue to modernize.

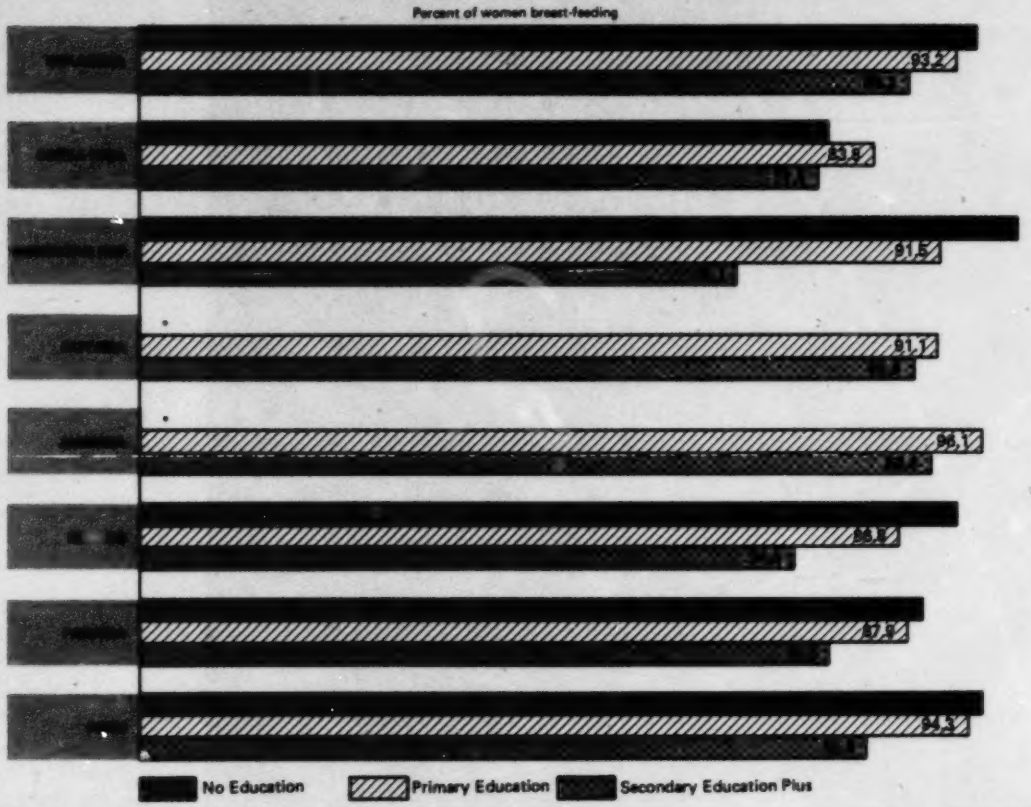
However, the examination of breast-feeding patterns according to the background of the women studied suggest extreme caution in

Figure 11. Percent of Women Breast-feeding the Penultimate Child by Educational Level: WFS Countries, Asia



*less than 20 cases in this category.
Source: Appendix Table A-7.

Figure 12. Percent of Women Breast-feeding the Penultimate Child by Educational Level: WFS Countries, Latin America and the Caribbean



*less than 20 cases in this category.
Source: Appendix Table A-7.

predicting a wholesale abandonment of the nursing of children. The initiation of breast-feeding is very high within all the subgroups, dropping below 75 percent in only a few cases. The differences among the different age and parity groups are slight in all but a few Asian countries, indicating no widespread rejection of breast-feeding among younger, lower fertility women. In the Latin American and Caribbean countries these differences are more pronounced, but still not overwhelming.

Women in rural areas nurse their children to a greater extent than those in urban areas, but the difference is ten percent or more only for one-third of the countries. The percent of women breast-feeding by broad educational levels shows that more educated women are less likely to breast-feed in all the Latin American countries, but this pattern is not consistent among the Asian countries.

The duration of breast-feeding, on the other hand, is more consistently related to development, according to the limited background variables available. Younger women, and women with fewer children tend to breast-feed for a shorter period of time, particularly in the Latin American countries. Also, for the ten countries for which duration by urban/rural residence is available, the difference in weaning age is substantial; the duration of breast-feeding in urban areas is 17 (for Bangladesh) to 90 percent (for Panama) lower than in rural areas. This supports the hypothesis that prolonged breast-feeding will become less common as countries continue to urbanize and industrialize.

A departure from this trend could be promulgated by the renewed interest in breast-feeding in many developed countries. In these countries, where the availability of breast milk substitutes is virtually universal, the practice of breast-feeding is becoming more popular for nutritional and other reasons. The force of public opinion coming from these developed countries combined with the efforts of consumer groups and health professionals within developing countries to encourage breast-feeding may succeed in slowing the decline in the duration of breast-feeding.

In summary, the weaning age of children in these nineteen developing countries will probably decrease over time, and it will decrease more among children born to educated, urban women. This trend will mean a reduction in the months of protection from pregnancy afforded by lactation, which could increase birth rates unless family planning efforts intensify enough to make up for the earlier return to fecundity among new mothers. If contraceptive use increases to high levels of seventy percent or more, lactation will cease to be an important factor in regulating the number and spacing of children, because breast-feeding is of limited value as an actual family planning method. Its primary importance in those cases will be as a health benefit and as a low cost source of food for infants. For much of the developing world, however, patterns of breast-feeding will remain a contributing factor in the levels of fertility for at least the immediate future. □

Appendix Table A-1: Selected Demographic, Social, and Economic Characteristics for Countries in the WFS: 1974-78

ASIA	Year of WFS Survey	Population Estimate[a,ee] Mid-1976 (Millions)	Surface Area (1000 km²)[bb]	Birth Rate[b,ee]	Death Rate[b,ee]	Rate of Population Growth[c,ee] (Annual, Percent)	Infant Mortality Rate[d,ee]	Population Under 15 Years[ee] (Percent)	Life Expectancy at Birth[ee] (Years)	Percent Women in Union,[gg] Age 15-19	Urban Population (Percent)[f,ee]	Labor Force in Agriculture[g,cc] (Percent)	Per Capita Gross National Product (U.S. $)	Physical Quality of Life[h,dd] Index	Adult Literacy Rate[i,kk,cc] (Total)	(Female)	(Male)	Population per Physician[jj,cc]	Population Having Access[jj,cc] to Safe Water (Percent)	Government Position on[ff] Family Planning	Percent Married Women[gg] Using Contraception, Age 15-49
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
INDONESIA	1976	134.7	2,027[k]	38	14	2.4	137	44	48	31.0[m]	18	60	240	48	72[m]	59	87	16,430	12	OP-DMR	26[m]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
KOREA, (REP.)	1974	34.8	98	24	7	1.7	47	39	65	3.2	48	45	670	82	88	81	94	1,600	62	NOP-FPAV	35
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
NEPAL	1976	12.9	141	44	20	2.3	152	40	44	61.5	4	93	120	27	13	3	22	38,660	9	OP-DMR	2
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PHILIPPINES	1978	44.0	300	35	10	2.5	80	43	58	11.0	32	51	410	71	87°	–	–	3,150	39	OP-DMR	37
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
THAILAND	1977	43.3	514	33	10	2.3	89	45	61	14.4°	13	77	380	71	79°	70	87	8,370	22	OP-DMR	33
LATIN AMERICA																					
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
COSTA RICA	1976	2.0	51	29	5	2.4	38	44	68	13	41	30	1,040	85	84°	84	85	1,550	77	OP-DMR	64
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
GUYANA	1975	.8	215	27	7	2.0	50	44	68	25	40	31	540	84	86[cc]	86	86	3,270	–	NOP-FPAV	31
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
MEXICO	1978	62.3	1,973	42	8	3.4	66	46	65	18	64	34	1,090	75	74°	70	78	1,840[hh]	62	OP-DMR	30
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
PERU	1977-78	16.0	1,285	40	11	2.9	80	45	56	16	55	40	800	65	72[cc]	67	90	1,580	47	NOP-FPAV	31
AFRICA																					
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

NA = not available

a Based on most recent official country or U.N. estimate: mid-1974 estimate for most countries. Each estimate was updated to mid-1976 by applying the same rate of growth as indicated by population change during part or all of the period since 1970.

b Rates refer to 1976 and were obtained by interpolating the 1970-1975 and 1975-1980 estimates of the U.N. to 1976. The 1970-1975 and 1975-1980 rates were used in the medium variant estimates and projections as assessed by the U.N. in 1973 (U.N., *Selected World Demographic Indicators By Countries, 1950-2000). The interpolated figures should be considered as rough approximations only.*

c Birth rate minus the death rate. Since the rates were based on unrounded birth and death rates, some rates do not exactly equal the difference between the birth and death rates shown because of rounding.

d Annual number of deaths to infants under one year of age per 1,000 births.

e The percentage of women currently 15-19 years of age currently in union (as defined by each country), excluding those currently married but separated.

f The percentage of the total population living in areas defined as urban by each country.

g Data refer to either 1975 or 1976.

h Based on an average of life expectancy at age one, infant mortality, and literacy rates.

i Adult literacy is defined by source bb and cc as the percentage of those 15 or more years of age who are able to read and write. The following exceptions hold:
Source bb: Indonesia and Malaysia, 10 or more years of age.
Data from source dd and cc refer to 1970; from source to year of survey. The following exceptions hold:
Source bb Indonesia and Nepal, 1971; Colombia, 1964; Sri Lanka and Costa Rica, 1963.
Source cc: Bangladesh and Peru, most recent estimate.
Data are from source bb unless otherwise indicated.

j The codes used to signify the government position on family planning are as follows:
OP-DMR: Official policy to reduce population growth for demographic reasons; support family planning to implement this policy.
NOP-FPAV: No official policy or statement on family planning or stated policy of non-intervention, services freely available from government centers or private clinics.

k Indonesia—including West Irian.

l Pakistan—excluding Jammu, Kashmir, Junagardh, Manavadar, Gilgit, and Baltisan.

m Indonesia—Java & Bali only.

n Malaysia—includes Peninsular Malaysia only.

o Excluding estimated adjustments for undernumberation.

p Data refer to either 1977 or 1978.

SOURCES:

aa Population Reference Bureau, *World Population Data Sheet: 1976; 1978.*

bb United Nations, *Demographic Yearbook, 1976,* T.3 and T.41; *1973,* T.33; *1971* T.1B.

cc World Bank, *World Tables 1980:* Social Indicators, T.3 and T.5.

dd Overseas Development Council. *The United States and World Development: Agenda 1979.* T.A-4.

ff Population Reference Bureau, *Family Planning and Marriage Data Sheet: 1970-1980.*

gg WFS First Country Reports, Various Tables.

hh WHO *World Health Statistics Annual, 1978,* Vol. III, T.2.1.

Appendix Table A-2: *Percent of Women Breast-feeding in the Last Closed Interval by Current Age and Birth Order. Confined to Women with at Least Two Births (including any current pregnancy) Whose Penultimate Birth Survived at Least 12 Months: WFS Countries†*

COUNTRY	< 25 YEARS BIRTH ORDER				25-34 YEARS BIRTH ORDER						35 YEARS + BIRTH ORDER					
	1	2	3	All**	1	2	3	4	5+	All	1	2	3	4	5+	All
ASIA																
Bangladesh	99.6	99.1	98.6	99.3	98.9	99.3	99.6	99.6	99.1	99.3	99.2	100.0	97.4	95.7	99.1	98.7
	(455)	(293)	(194)	(1031)	(93)	(225)	(270)	(327)	(595)	(1510)	(41)	(75)	(93)	(138)	(1073)	(1420)
Indonesia	98.5	96.7	99.2	98.1	97.4	98.3	98.6	98.6	99.4	98.5	97.4	99.1	98.5	98.4	98.2	98.3
	(550)	(241)	(87)	(910)	(431)	(487)	(450)	(333)	(458)	(2158)	(268)	(295)	(334)	(380)	(1508)	(2785)
Jordan	93.1	93.9	92.5	93.4	92.6	91.7	93.5	95.8	92.9	93.3	98.2	86.5	94.7	98.6	94.1	94.2
	(190)	(170)	(100)	(527)	(112)	(133)	(176)	(192)	(557)	(1171)	(25)	(45)	(61)	(68)	(1022)	(1221)
Korea, Rep. of	93.8	94.7	80.0*	93.6	91.7	96.1	97.4	94.9	98.5	95.0	92.9	97.3	97.4	98.0	97.2	97.1
	(145)	(38)	(5)	(188)	(579)	(622)	(382)	(158)	(67)	(1808)	(140)	(291)	(454)	(491)	(924)	(2300)
Malaysia	80.3	76.6	73.8	78.2	63.3	78.6	78.6	83.1	85.6	77.9	70.0	76.2	77.6	81.5	82.1	79.9
	(309)	(167)	(61)	(559)	(360)	(458)	(359)	(308)	(389)	(1874)	(203)	(261)	(294)	(313)	(1461)	(2532)
Nepal	99.3	99.4	100.0	99.3	100.0	99.7	100.0	99.5	99.6	99.8	99.3	99.3	100.0	100.0	99.4	99.5
	(284)	(164)	(47)	(505)	(272)	(350)	(323)	(246)	(249)	(1440)	(126)	(143)	(236)	(219)	(830)	(1553)
Pakistan	98.2	99.2	88.3	97.3	97.3	99.1	99.3	99.4	99.0	98.9	97.7	98.6	99.3	97.1	98.8	98.6
	(223)	(161)	(61)	(481)	(163)	(226)	(257)	(223)	(459)	(1328)	(53)	(85)	(102)	(135)	(1028)	(1402)
Philippines	92.2	93.4	87.0	91.5	80.3	84.6	87.6	90.8	90.5	86.8	76.0	85.8	86.1	85.8	89.8	87.9
	(337)	(239)	(87)	(703)	(455)	(596)	(552)	(429)	(524)	(2556)	(169)	(287)	(348)	(385)	(2184)	(3373)
Sri Lanka	96.0	98.5	98.1	96.8	94.4	96.3	95.9	97.5	98.4	96.3	94.5	96.9	96.6	98.2	97.7	97.2
	(243)	(120)	(55)	(439)	(422)	(466)	(372)	(287)	(315)	(1861)	(269)	(322)	(358)	(344)	(1442)	(2735)
Thailand	91.2	93.9	95.3	92.0	86.0	94.4	96.0	96.0	93.9	92.7	90.6	97.4	89.7	95.0	94.5	94.0
	(206)	(91)	(22)	(323)	(269)	(251)	(223)	(145)	(166)	(1054)	(105)	(142)	(174)	(190)	(796)	(1407)
LATIN AMERICA AND THE CARIBBEAN																
Colombia	88.4	94.9	94.0	91.1	85.9	90.6	91.6	93.9	93.6	91.0	85.9	92.8	94.4	96.6	95.3	94.4
	(242)	(117)	(50)	(425)	(213)	(224)	(178)	(148)	(234)	(997)	(85)	(125)	(126)	(119)	(679)	(1134)
Costa Rica	72.9	74.0	84.0	75.4	74.5	82.9	81.9	83.2	83.2	81.5	87.3	76.2	80.6	82.5	86.2	84.2
	(377)	(196)	(94)	(756)	(161)	(170)	(138)	(125)	(346)	(940)	(55)	(84)	(67)	(63)	(435)	(704)
Dominican Republic	89.3	95.6	93.0	92.0	82.1	84.1	95.0	95.3	95.5	91.0	80.9	94.2	88.6	87.9	91.7	90.4
	(169)	(91)	(43)	(326)	(84)	(126)	(100)	(106)	(176)	(592)	(47)	(52)	(88)	(66)	(423)	(676)
Guyana	81.2	94.4	93.7	87.2	84.8	92.3	92.1	91.3	90.8	90.4	88.1	87.9	85.7	96.4	92.0	91.2
	(239)	(126)	(64)	(460)	(171)	(195)	(202)	(150)	(283)	(1001)	(67)	(99)	(98)	(112)	(697)	(1073)
Jamaica	93.8	98.0	92.2	94.8	91.9	91.0	95.7	99.0	98.0	95.0	95.2	91.4	93.0	98.8	97.7	96.4
	(195)	(98)	(51)	(364)	(136)	(134)	(116)	(102)	(150)	(638)	(84)	(70)	(86)	(84)	(432)	(756)
Mexico	79.4	86.4	89.1	83.1	74.6	85.8	86.9	89.8	86.4	84.9	77.7	80.4	87.6	87.5	87.5	86.4
	(402)	(264)	(110)	(833)	(315)	(338)	(337)	(295)	(574)	(1859)	(121)	(163)	(194)	(200)	(1397)	(2075)
Panama	80.3	82.1	85.4	82.5	74.2	80.5	83.5	87.8	89.9	82.7	74.8	86.2	84.3	89.2	90.3	87.2
	(173)	(84)	(48)	(395)	(252)	(267)	(218)	(156)	(237)	(1130)	(119)	(159)	(127)	(157)	(555)	(1117)
Peru	91.1	97.3	93.3	93.5	86.2	89.1	92.5	94.8	93.6	91.3	88.2	87.9	90.0	91.0	94.5	92.6
	(349)	(185)	(87)	(647)	(295)	(344)	(319)	(256)	(389)	(1604)	(133)	(216)	(215)	(242)	(1296)	(2101)

**Total includes the few women under 25 with 4th and higher births.
*Cell size less than 20.
†Not available for Kenya.

Source: B. Ferry, 1981: Tables 5A to 5D.

Appendix Table A-3: ***Percent of Women Breast-feeding in the Last Closed Interval by Birth Order. Confined to Women with at Least Two Births (including any current pregnancy) Whose Penultimate Birth Survived at Least 12 Months: WFS Countries†***

COUNTRY	ALL AGES BIRTH ORDER					
	1	2	3	4	5+	All
ASIA						
Bangladesh	99.4	99.3	98.9	98.7	99.1	99.1
	(589)	(593)	(558)	(534)	(1688)	(3961)
Indonesia	97.9	98.1	98.6	98.5	98.5	98.3
	(1248)	(1024)	(870)	(738)	(1973)	(5853)
Jordan	93.3	92.1	93.4	96.9	93.6	93.7
	(327)	(347)	(338)	(305)	(1602)	(2919)
Korea, Rep. of	92.2	96.4	97.3	97.2	97.3	96.1
	(864)	(951)	(841)	(649)	(991)	(4296)
Malaysia	70.9	77.5	77.7	81.9	82.8	78.9
	(872)	(886)	(714)	(637)	(1856)	(4965)
Nepal	99.6	99.5	100.0	99.6	99.4	99.6
	(682)	(657)	(605)	(473)	(1080)	(3497)
Pakistan	97.8	99.0	97.7	98.6	98.9	98.6
	(438)	(472)	(421)	(385)	(1496)	(3212)
Philippines	83.7	86.8	87.0	88.3	89.9	87.8
	(962)	(1122)	(987)	(851)	(2711)	(6632)
Sri Lanka	94.8	96.8	96.4	97.7	97.8	96.8
	(934)	(908)	(785)	(647)	(1760)	(5035)
Thailand	88.7	95.2	93.3	95.2	94.4	93.2
	(580)	(483)	(419)	(339)	(963)	(2784)
LATIN AMERICA AND THE CARIBBEAN						
Colombia	87.0	92.3	92.9	95.0	94.9	92.5
	(540)	(466)	(354)	(279)	(917)	(2556)
Costa Rica	74.7	77.8	82.3	80.4	85.2	80.3
	(593)	(450)	(299)	(240)	(818)	(2400)
Dominican Republic	86.0	90.0	92.2	93.1	92.7	91.0
	(300)	(269)	(231)	(188)	(606)	(1594)
Guyana	83.4	91.9	90.7	93.0	91.7	90.2
	(477)	(420)	(364)	(284)	(989)	(2534)
Jamaica	93.5	93.4	94.1	98.5	97.8	95.6
	(415)	(302)	(253)	(204)	(584)	(1758)
Mexico	77.3	84.8	87.5	88.4	87.1	85.2
	(838)	(765)	(641)	(544)	(1979)	(4767)
Panama	76.3	82.5	84.0	88.8	90.2	84.6
	(544)	(510)	(393)	(331)	(794)	(2572)
Peru	88.7	90.8	91.8	93.2	94.3	92.2
	(777)	(744)	(621)	(518)	(1692)	(4353)

†Not available for Kenya.
Source: B. Ferry, 1981: Tables 5A to 5D.

Appendix Table A-4: Median Length of Breast-feeding in Months During the Last Closed Birth Interval by Birth Order and Age. Confined to Women Whose Penultimate Birth Survived at Least 12 Months: WFS Countries†

COUNTRY	< 25 YEARS BIRTH ORDER				25-34 YEARS BIRTH ORDER						34 YEARS + BIRTH ORDER					
	1	2	3	All	1	2	3	4	5+	All	1	2	3	4	5+	All
ASIA																
Bangladesh	24.2	23.9	23.5	24.0	24.4	24.2	24.2	24.0	23.9	24.0	29.6	29.8	25.2	24.2	24.0	24.1
Indonesia	18.3	18.3	17.7	18.2	21.6	23.5	19.9	22.4	18.4	20.4	19.8	23.5	23.8	23.7	23.3	23.5
Jordan	7.6	8.8	11.6	8.8	5.4	11.0	11.8	12.4	11.9	11.8	12.3	5.7	11.4	12.1	13.8	12.4
Korea, Rep. of	14.1	17.2	18.0	14.7	13.5	14.8	17.3	19.6	17.2	15.2	17.7	17.5	19.0	21.4	22.3	20.4
Malaysia	2.7	3.0	2.4	2.7	1.0	2.3	2.9	3.5	3.7	2.7	2.4	3.4	4.1	5.5	4.0	4.0
Nepal	22.5	18.0	17.3	18.5	24.2	23.8	23.6	19.4	18.0	23.6	26.5	25.5	24.2	24.2	23.7	24.0
Pakistan	17.8	14.9	14.6	15.5	18.4	18.2	18.2	17.6	16.2	17.8	23.5	23.7	23.5	23.7	18.2	18.5
Philippines	11.6	12.0	11.7	11.8	9.0	11.8	12.0	12.3	12.2	11.9	7.8	11.7	11.7	11.9	12.1	12.0
Sri Lanka	12.3	13.6	17.5	12.3	11.9	12.5	14.2	17.7	16.5	12.5	12.4	12.4	14.3	17.6	17.8	17.6
Thailand	12.4	15.1	18.3	14.0	12.3	17.1	17.2	17.7	17.3	15.5	17.8	16.6	14.9	17.7	18.4	17.9
LATIN AMERICA AND THE CARIBBEAN																
Colombia	5.4	5.1	6.8	5.7	4.4	5.5	6.2	8.5	8.2	6.1	7.1	6.3	7.0	9.2	10.4	8.9
Costa Rica	2.1	2.5	3.5	2.7	2.4	2.8	3.2	4.0	4.9	3.3	3.6	3.2	3.4	5.6	6.5	5.5
Dominican Republic	6.0	10.0	10.7	7.8	3.1	4.0	8.1	10.8	11.7	8.0	5.2	6.8	7.5	11.7	11.7	10.9
Guyana	4.4	4.7	6.6	5.2	5.3	5.9	6.2	8.4	8.7	6.5	5.3	5.8	8.6	9.2	10.3	9.1
Jamaica	6.7	7.6	6.3	7.0	5.1	6.1	7.8	6.7	7.4	6.6	6.8	6.4	7.6	7.8	8.9	8.6
Mexico	5.8	9.0	11.7	8.1	3.3	6.5	9.1	11.8	11.7	8.5	6.6	6.3	10.6	8.3	11.9	11.6
Panama	3.3	5.7	6.3	5.1	2.0	3.0	5.7	8.9	9.4	5.2	2.5	4.1	4.3	8.4	11.8	8.1
Peru	9.8	12.0	11.9	11.6	5.9	8.4	11.9	11.9	13.2	11.7	6.4	7.5	9.2	13.4	13.3	12.2

†Not available for Kenya.

Source: B. Ferry, 1981: Table 5E.

Appendix Table A-5: Median Length of Breast-feeding in Months During the Last Closed Birth Interval By Birth Order. Confined to Women Whose Penultimate Birth Survived at Least 12 Months: WFS Countries†

COUNTRY	BIRTH ORDER					
	1	2	3	4	5+	All
ASIA						
Bangladesh	24.3	24.1	24.0	24.0	23.4	24.0
Indonesia	18.7	21.1	21.1	23.6	20.5	20.8
Jordan	7.6	8.7	11.7	12.2	12.3	12.0
Korea, Rep. of	14.0	15.8	18.0	20.3	22.1	17.6
Malaysia	1.9	2.8	3.2	4.1	4.0	3.2
Nepal	24.0	23.8	23.7	23.6	23.5	23.7
Pakistan	18.1	18.0	18.1	18.0	18.0	18.0
Philippines	9.6	11.8	11.9	12.1	12.1	11.9
Sri Lanka	12.1	12.4	14.3	17.6	17.7	14.9
Thailand	13.0	16.2	15.6	17.6	18.2	16.7
LATIN AMERICA AND THE CARIBBEAN						
Colombia	5.1	5.8	6.5	8.7	9.5	7.5
Costa Rica	2.4	2.8	3.4	4.7	5.9	3.4
Dominican Republic	4.9	7.4	8.2	10.8	11.7	8.7
Guyana	5.0	5.7	6.5	8.6	9.4	7.6
Jamaica	6.3	6.4	7.5	7.3	8.7	7.6
Mexico	4.5	7.3	10.6	11.5	11.9	9.8
Panama	2.5	3.4	5.5	8.6	11.6	6.0
Peru	7.8	9.8	11.7	12.1	13.2	11.9

†Not available for Kenya.
Source: B. Ferry, 1981: Table 5E.

Appendix Table A-6: Percent of Women Who Breast-fed Their Penultimate Child by Urban/Rural Residence: WFS Countries†*

COUNTRY	RESIDENCE				
	Urban		Rural		% Difference
ASIA	%	Number	%	Number	R-U/U
Bangladesh	98.3	163	99.4	2056	1.1
Indonesia	95.1	452	99.4	2965	4.5
Jordan	92.6	677	97.3	257	5.1
Korea, Rep. of	95.5	985	98.3	1047	3.0
Malaysia	62.5	331	84.8	1549	35.7
Pakistan	98.0	174	100.0	468	2.0
Philippines	67.5	1008	79.0	2151	17.0
Sri Lanka	97.4	419	97.5	1985	0.0
Thailand	76.8	164	96.3	1099	25.4
LATIN AMERICA AND THE CARIBBEAN					
Colombia	91.5	671	95.0	340	3.8
Costa Rica	80.5	538	83.7	286	4.0
Dominican Republic	85.9	262	94.7	225	10.2
Guyana	89.0	362	91.3	657	2.6
Jamaica	94.0	404	96.2	426	2.3
Mexico	83.3	1262	91.9	754	10.3
Panama	81.1	436	88.7	356	9.4
Peru	89.8	4181	97.5	2441	8.6

*Confined to ever-married women with at least two births including any current pregnancy, whose last closed birth interval exceeded 12 months and whose penultimate child survived at least 24 months.

†Not available for Kenya or Nepal.

Sources: WFS First Country Reports, Table 4.1.5B except Indonesia (3.7.5A); Thailand (4.1.3C); Pakistan (4.1.4); Costa Rica (4.1.4A); Colombia (4.1.4B); Malaysia, Dominican Republic and Bangladesh (4.1.4C); Mexico (4.1.4E); Jordan, the Philippines, and Sri Lanka (4.1.5C).

Appendix Table A-7: Percent of Women Who Breast-fed Their Penultimate Child by Educational Level: WFS Countries†*

COUNTRY	EDUCATIONAL LEVEL					
	None		Primary		Secondary	
ASIA	%	Number	%	Number	%	Number
Bangladesh	99.4	1786	99.3	375	100.0	54
Indonesia	99.1	1858	98.8	1434	93.2	116
Jordan	95.8	666	89.5	153	87.8	115
Korea, Rep. of	98.6	580	97.8	1021	92.7	426
Malaysia	86.7	837	78.7	816	63.1	160
Nepal	99.6	1810	100.0	45	—	—
Pakistan	100.0	583	98.0	36	91.0	23
Philippines	79.6	211	80.8	876	72.5	2071
Sri Lanka	97.5	610	98.1	1028	96.5	765
Thailand	93.8	259	96.2	929	64.5	76
LATIN AMERICA AND THE CARIBBEAN						
Colombia	95.6	228	93.2	584	88.2	195
Costa Rica	78.5	51	83.8	590	77.2	183
Dominican Republic	100.0	39	91.5	401	68.1	47
Guyana	—	—	91.1	775	88.5	235
Jamaica	—	—	96.1	695	90.4	135
Mexico	93.4	517	86.8	1185	74.4	317
Panama	89.5	91	87.9	376	78.6	325
Peru	96.5	1989	94.3	3309	82.8	1324

*Confined to ever-married women with at least two births including any current pregnancy, whose last closed birth interval exceeded 32 months and whose penultimate child survived at least 24 months.

†Not available for Kenya.

—No women in this category.

Sources: WFS First Country Reports, Table 4.1.5A except for Indonesia (3.7.5C); Thailand (4.1.3A); Pakistan (4.1.4); Costa Rica (4.1.4B); Nepal, Malaysia, Dominican Republic, Bangladesh and Mexico (4.1.4A); Peru (4.1.5C); and Panama (special tabulation).

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